

The United States MILLER

Volume 6.—No. 2.

MILWAUKEE, DECEMBER, 1878.

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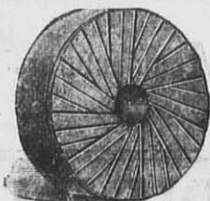
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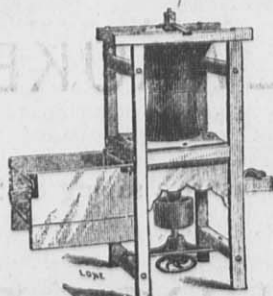
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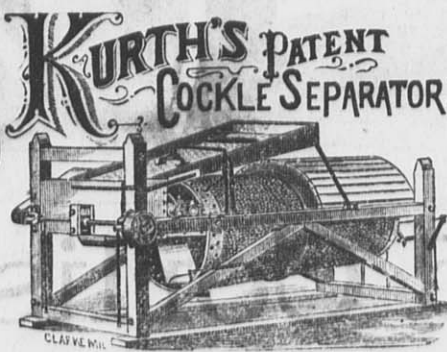
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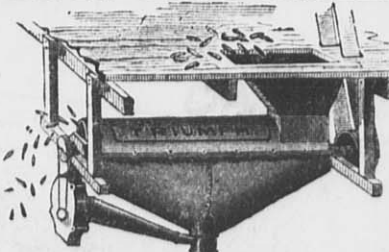
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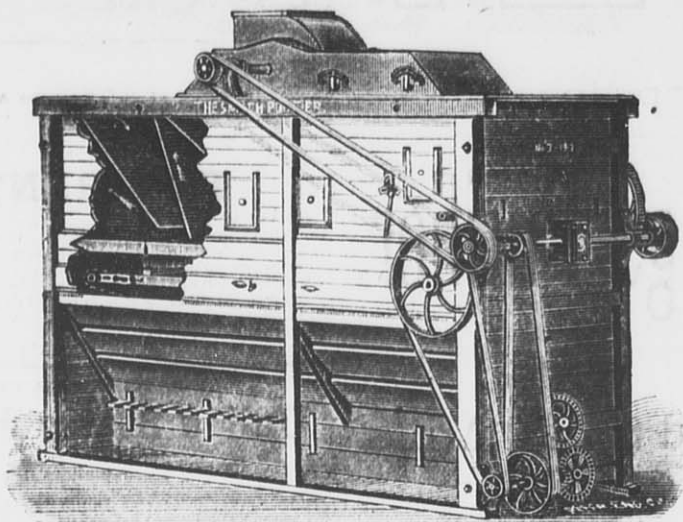
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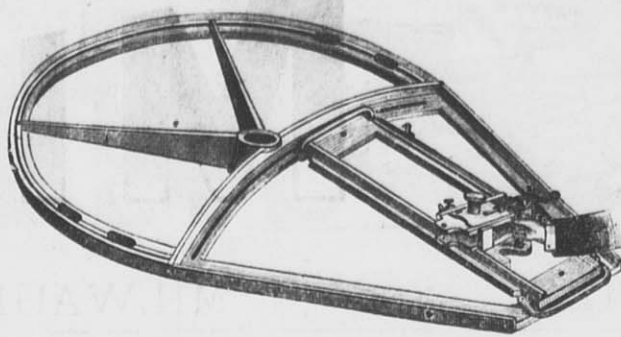
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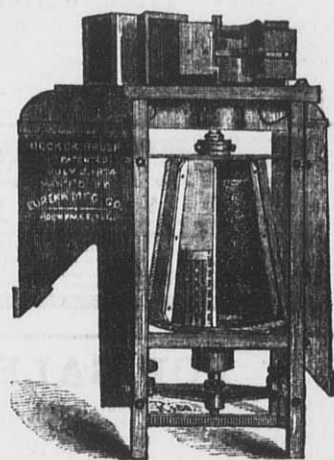
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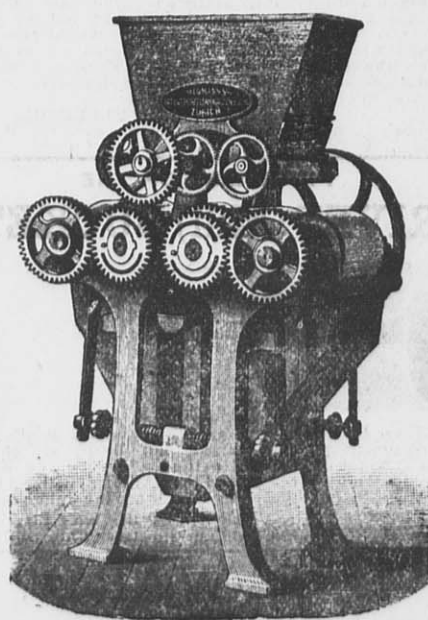
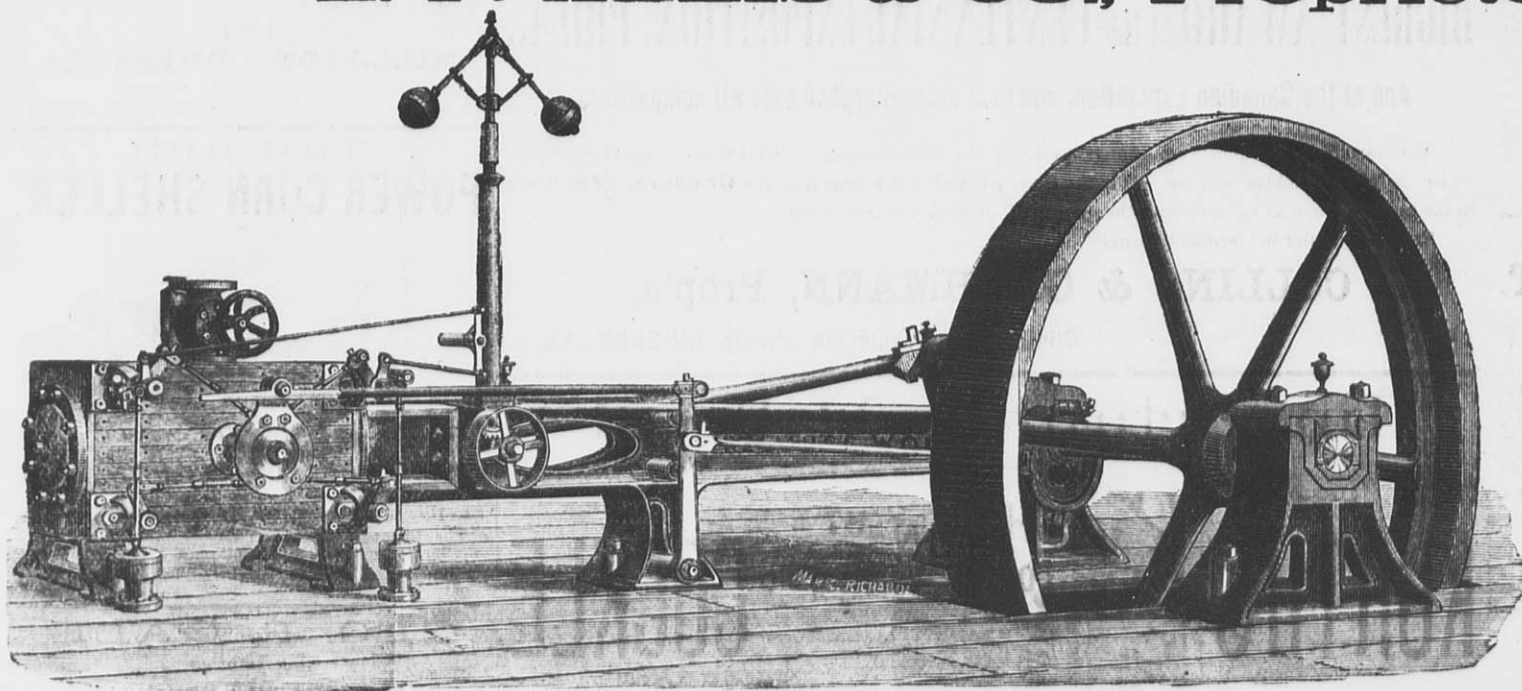
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The United States MILLER

Volume 6.—No. 2.

MILWAUKEE, DECEMBER, 1878.

Terms \$1.00 a Year in Advance.
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IMPORTANT TO BOILER MAKERS.

United States Steamboat Boiler Inspection.

Gen. James A. Dumont, Supervising Inspecting General of Steamboats of the United States, has favored us with advance sheets of his report for the fiscal year ending June 30th, 1878, to the Treasury Department, from which we glean several items of general interest. There are now employed in this department 109 officers, clerks and messengers. During the year 4,137 steamboats have been inspected, representing a tonnage of 1,017,432.03, and 14,489 officers have been duly licensed. The receipts from inspection fees and officers' licenses have exceeded the expenses of this branch of the service by \$56,454.20.

The total number of lives lost on steamers inspected were 212, thirty-three of which were due to explosions of boilers.

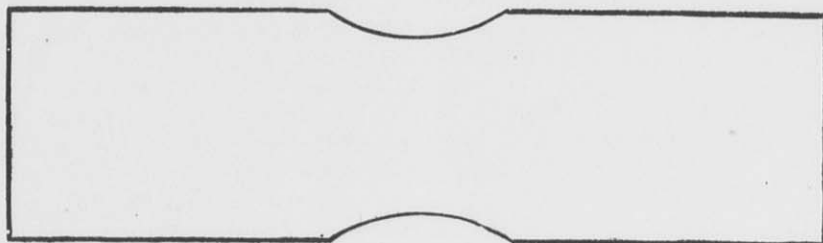
Gen. Dumont says in his report: The decrease of the fatal casualties in the last two years is no doubt due to the severer discipline that has been established during that period as compared with preceding years. Although the service is yet susceptible of improvement in that respect, I am proud to say that so thoroughly have its laws been administered, that in upward of two hundred million persons carried on American steamers during the last year, only one person and one-tenth were lost in each million. I do not hesitate to assert that travel by steamer under the existing laws of the United States is safer than in any other country. It gives me great pleasure to acknowledge the cordial acquiescence of the supervising inspectors in all my efforts to improve the service, and the same cordial support has been extended by the steam-vessel owners. It is true they complain that some of the statutes are unjust to them while affording no advantage to the public, and they are naturally opposed to being compelled to purchase worthless patents. It is not appropriate for me to discuss their wrongs here, but I hope justice may be done them, for as a class they are ready to comply with every wholesome provision of law.

No. 1 represents $\frac{1}{4}$ -inch iron 1 inch wide at breaking point, and No. 2 the same iron, $\frac{1}{4}$ inch, or the square of its thickness, at the point of fracture, the manufacturers giving preference to the latter over No. 1 as required by the old rule. Up to this date, however, experiments fail to show any material difference in the results obtained. Rule 8 was amended so as to compel a plate to be put on "all boilers hereafter built, * * * on which shall be the name of the manufacturer of the iron, the place where manufactured, and the tensile strength of the iron, and also the name of the builder of the boiler, where built, and the year." Experience having demonstrated that the stamp required on boiler-plates became obliterated by corrosion after two or three years' use, the above amendment was adopted to secure a permanent record of the subject and to afford a guide to inspectors in certifying to facts which otherwise they must frequently accept on hearsay. The amended rules were submitted and approved January 31st, and they have been in operation since that date.

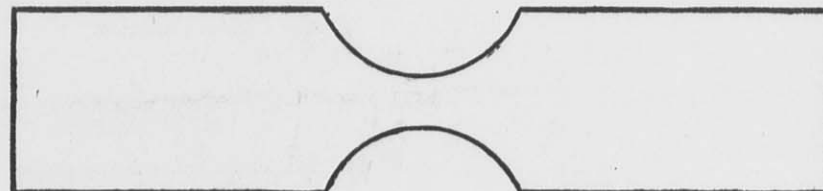
Many manufacturers of steam boilers complained to the Board of Inspectors that the method of testing iron and steel was unjust to them. Experience demonstrated that pieces from the same plate sometimes varied several thousand pounds in tensile strength, "the preparation and varying thickness of the test-piece, whether sheared or planed out, the placing in the machine and adjustment thereof, constituting some of the serious difficulties."

In consequence of these representations the Board altered the rule so as to test two pieces instead of one, as formerly required, making the samples to be tested different in form and providing two methods of testing. It was hoped to thereby secure opportunities for com-

paring the correctness of the two methods, and meanwhile the manufacturers were allowed the benefit of the sample that showed the highest tensile strength. It was believed that no injury could result from the double-test rule, for the results of tests of two pieces from the same plate would more surely indicate defects, if any existed, than were only one piece tested. Moreover, if any great difference in the results of two samples were noticed it would lead to a careful search for defects in welding and lack of homogeneousness, and other qualities required by statute. The object sought in the selection of two samples instead of one was not to give manufacturers advantage, but to settle the question as to whether the same sample of iron would show different results if prepared in different ways, illustrated as follows:



No. 1—PRESCRIBED BY OLD RULE.



No. 2—ADDED BY AMENDED RULE.

One of the most important subjects connected with the steamboat inspection service is contained in the statutes referring to the quality of the iron plates to be used in the construction of boilers, requiring the manufacturers of boiler-iron to guarantee its tensile strength, homogeneousness and toughness, as well as ability to withstand the effects of repeated heating and cooling, and imposing pecuniary penalties as well as imprisonment for placing false stamps upon the same. Section 4430, Revised Statutes, also makes it the duty of supervising inspectors to provide means for ascertaining that the law has been complied with before such iron can be used in the construction of marine boilers. Therefore the Board of Supervising Inspectors has established rules for ascertaining the tensile strength only, leaving the other qualities to be decided by the judgment of the inspector making the tests. Manufacturers assert the result of this has been to develop a disposition to secure the greatest possible amount of tensile strength at the sacrifice of homogeneousness and toughness, equally important elements, and the records show no instance of an inspector's rejecting boiler-plates except for deficiency in tensile strength.

The evils consequent upon such a course will be better understood when it is explained that all manufacturers admit that tensile strength can be increased by combinations of materials that tend so decrease the other qualities. In other words, the harder and more brittle the iron the greater the tensile strength. Many manufacturers assert that iron combining all the qualities required by law cannot be made to exceed 55,000 pounds tensile strength; yet, according to the table of pressures allowed by the Board of Supervising Inspectors, more steam is allowed to a hard, brittle plate $\frac{1}{4}$ inch thick than to a plate 5-16 of an inch thick containing all the lawful qualities. This is decidedly wrong if the theory of the manufacturers is correct. In any event, it is evidently necessary that a positive and generally acceptable rule be established for deciding this important matter.

Dr. Charles Huston, of Messrs. Huston, Penrose & Co., of Coatesville, Pa., who has made many experiments and given me some

valuable suggestions, thinks the greater or less reduction of area by tension to ascertain tensile strength indicates the absence or presence of the required qualities, and that on the maximum and minimum percentage of such reduction might be based a rule for the rejection of such plates as were below the latter as being too hard for boiler purposes.

The Society of Railroad Administration of Germany has recommended its Government to adopt 25 per cent reduction of area as the standard of boiler-iron in that country on first quality iron of a minimum breaking strain of 51,213 pounds, from which information, and the experience acquired in testing iron of various American manufacturers, I consider it safe to assume that the desired purpose would be accomplished by adopting a uniform scale of reduction of area of 15 per cent, as the mini-

TABLE No. 3.
Tests made in the Treasury Department—English iron.

With the grain.			Across the grain.		
Sample No.	Strain per square inch of section.	Reduced area per cent.	Sample No.	Strain per square inch of section.	Reduced area per cent.
150	50,555	16	151	40,732	2
152	54,909	13	153	45,334	5
154	56,600	20	155	50,476	8
156	53,061	17	157	54,040	13
158	52,040	10	159	52,575	7

Samples of English Iron.—Nos. 150, 151, Staffordshire. Nos. 152, 153, Thorneycroft, B B B. Nos. 158, 159, Thorneycroft, S. Nos. 153, 154, Bradley, L F. Nos. 156, 157, Lowmoor.

Nos. 124, 125, and 148 were samples of $\frac{1}{2}$ inch iron cut exactly the square of the thickness, and Nos. 131 and 132 are from the same iron whose area approximated one-quarter of one square inch. Nos. 128 and 129 were from $\frac{1}{4}$ inch iron reduced to the square of its thickness, while Nos. 135 and 136 of the same thickness were nearly one inch wide. Nos. 126 and 127, from 5-16 iron, were small, and Nos. 133 and 134 of the same thickness were of the larger area. Nos. 146 and 147 were samples of $\frac{1}{4}$ -inch iron cut the square of its thickness. I am particular in this description to prove that the change adopted by the Board last winter of allowing two pieces of different areas to be tested, instead of one as provided by the old rule, did not give the manufacturers any advantage. The average breaking weight of square inch of section is 59,621 pounds in the small samples and 59,818 pounds in the large ones, showing a difference of only 197 pounds in favor of the latter; the average breaking weight of the samples cut with the grain is 61,196 pounds to the square inch, and of those cut across the grain, 58,703 pounds to the square inch, a difference in favor of the first 2,493 pounds. Duplicate samples of the same iron, broken at the manufactory (see table 2), show nearly the same relative results, namely, 59,300 pounds with the grain and 56,057 pounds across it, a difference of 3,246 pounds in favor of the first. The iron broken on the scales at the Treasury Department shows an average of 2,271 pounds greater tensile strength than does that broken on the manufacturers' scales; which opens a question of the correctness of the scales, an important matter, for not only pecuniary penalties but imprisonment follow false stamping.

The samples number from 150 to 159, inclusive, are ten samples of English iron of various brands, showing an average breaking weight to the square inch of 51,038 pounds, with an average reduction of area of 15 per cent in the samples cut with the grain and of 5 per cent in those cut across it, showing inferiority to the American iron, for the latter exhibits a reduction of 38 per cent with and 15 per cent against the grain in the samples tested at the Treasury Department, and of 39 per cent with and 15 $\frac{1}{2}$ per cent against the grain in those tested by the manufacturers. This comparison again calls attention to the probable inaccuracy in the scales used, the uniformity of percentage showing an average inequality in the iron taken from different parts of the same sheet. The difference in tensile strain must be due to defects in the scales.

*These two latter samples show a uniformity of texture not found in any other samples tested, either American or foreign, as evidenced by a difference of only 4 per cent in reduction of area with and across the grain, but both are below the German standard.

[To be continued.]

A new oat meal mill has recently been erected and put in operation in Joliet, by Messrs. Ford & Slater. The mill building is three stories in height and 40 by 60 feet in size, with a kiln attached 26 by 40 feet. Three run of stone are at present running, with provision for two more run. The works are driven by a 60-inch Stilwell & Bierce Eclipse Turbine water wheel.

mum for the lowest tensile strength used in boiler-making (which is about 45,000 pounds), increasing the reduction of area 5 per cent each additional 5,000 tensile strength above that.

Below I give the results of a series of tests made in conjunction with Dr. Huston, each experimenting on alternate samples from the same plates, the main object of the experiments being to ascertain the relative strength of boiler-plate with and across the grain, while other interesting results were also obtained. In order to illustrate the experiments to the best advantage they are presented in three tables, as follows:

TABLE No. 1.

Tests made at the Treasury Department—American iron.

Lengthwise of the grain.			Crosswise of the grain.		
Sample No.	Tensile strain per square inch.	Reduced area per cent.	Sample No.	Tensile strain per square inch.	Reduced area per cent.
124	$\frac{1}{4}$ -inch iron. 61,481	30	125	$\frac{1}{4}$ -inch iron. 58,653	22
132	60,408	47	131	57,377	15
*148	56,270	25	*149	54,461	17
128	$\frac{1}{4}$ -inch iron. 61,538	36	129	$\frac{1}{4}$ -inch iron. 59,125	18
136	58,373	38	135	53,333	9
126	5-16 inch iron. 62,871	38	127	58,765	20
134	62,195	43	133	60,202	10
146	$\frac{1}{4}$ -inch iron. 61,918	33	147	$\frac{1}{4}$ -inch iron. 63,469	6

*Samples 148 and 149 American iron, but of different manufacture from the other samples.

TABLE No. 2.

Tests made by manufacturer.

With the grain.		Across the grain.	
Tensile strain per square inch of section.	Reduced area per cent.	Tensile strain per square inch of section.	Reduced area per cent.
$\frac{1}{4}$ -inch iron. 60,000	44	$\frac{1}{4}$ -inch iron. 61,800	22
59,000	42	57,300	13 $\frac{1}{2}$
$\frac{1}{4}$ -inch iron. 55,400	34 $\frac{1}{2}$	$\frac{1}{4}$ -inch iron. 52,300	17 $\frac{1}{2}$
60,100	34	54,600	11
5-16 inch iron. 57,000	45	5-16 inch iron. 56,800	20
63,400	44	55,900	21
$\frac{1}{4}$ -inch iron. 60,200	31	$\frac{1}{4}$ -inch iron. 53,700	6

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.
Subscription Price.....\$1 per year in advance
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All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.
Bills for advertising will be sent monthly unless otherwise agreed upon.
For advertising rates address the Editor.

MILWAUKEE, DECEMBER, 1878.

We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. We are working our best for the milling interest of this country, and we think no more than fair that our milling friends should help the cause along by liberal subscriptions. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

THE UNITED STATES MILLER has now entered upon its sixth volume, and has become universally acknowledged to be one of the most valuable milling journals in America, both for the purpose of transmitting knowledge on milling and mechanical subjects and as an advertising medium for introducing and selling all kinds of modern milling machinery. It is our aim to meet the wants of our patrons, whether manufacturers or consumers. Our editorial course will be entirely independent, and we shall do our best to give our readers the benefit of the latest important news on subjects pertaining to the objects of this paper. Our circulation and advertising patronage cover all sections of the country. We do not deal in machinery ourselves, and consequently have no "axes to grind." We cordially invite all those who have already patronized us to continue their patronage, and those who have not to try our columns. We append herewith our

ADVERTISING RATES FOR 1879.

	1 mo.	2 mo.	3 mo.	6 mo.	1 year.
One inch card.....	\$ 2 00	\$ 4 00	\$ 5 50	\$10 00	\$20 00
Two ".....	4 00	8 00	11 00	20 00	40 00
Four ".....	6 00	12 00	16 50	30 00	60 00
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One-half page.....	40 00	80 00	112 00	200 00	400 00
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Size of page, 12x18. Length of column, 16 inches. Width of column, 2 1/2 inches; 4 columns to each page. Business editorial matter per line, 30 cents. If over 50 lines, 25 cents.

Illustrations charged for in proportion to space occupied.

Advertising for Millers wishing situations, or millers wanting to engage employees, 50 cents.

MILL FOR SALE advertisements, \$2 each insertion.

We have recently published a List of Names and Post-Office Addresses of the Flour-Mill Owners of the United States and Canada, which is of great value to those who desire to communicate by circular with American mill-owners. The price is \$5 per copy, post paid. Cash must accompany the order.

We have also lately published a Saw and Planing Mill Directory of the United States and Canada. Price, \$5.

Subscription price to the UNITED STATES MILLER, \$1 per year.

McLean's Millers' Text Book, which every miller should have. Price by mail, 60 cents, post paid.

Ropp's Easy Calculator, which every business man should have in his pocket or on his desk. Price by mail, post paid, \$1.

Our Job Printing Department is one of the finest in the State, and particular attention is paid to all kinds of commercial work, which we can do on the most reasonable terms. Parties desiring to publish catalogues, circulars, etc., should send for estimates.

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UNITED STATES MILLER,
62 Grand Opera House, Milwaukee, Wis.

GERMANY proposes to put an import duty on grain.

HON. C. A. Pillsbury, the Minneapolis miller, is again elected State Senator.

THE Miller and Millwright for November perpetrates a biography of Bro. Hoppin, of the N. W. Miller. It don't hurt Hoppin any, but great snakes! it's rough on George Washington.

THE Minneapolis and Minnesota Millers' Associations have passed resolutions strongly condemning the use of wire binders. It was proposed that a difference of ten cents per bushel should be made on wheat containing any wire.

KENNET CHISHOLM, of Ripon, Wis., husked 140 bushels of corn standing in the hill, in 12 hours. The corn was put in baskets and piled in heaps of 15 to 20 bushels.—Ec.

This beats Chicago Sam in handling raw corn. The extract is good enough for him.

In England, 40 bushels of wheat an acre is not an unusual yield, and fifty or sixty bushels per acre is often realized as the result of high farming. Nevertheless, England is obliged to import each year about 100,000,000 bushels, in addition to her own crop, to feed her people.

RUMOR has it, and in this case we think the rumor is correct, that the St. Louis Post will absorb the St. Louis Dispatch. The Post is

one of, if not the best dailies in St. Louis, and we must confess that we enjoy reading it very much, especially the JOKES. The Post funny man is a good 'un.

MR. Oscar Oexle the well-known mill engineer of Augsburg, Bavaria, has been spending a few days in Minneapolis. He is blind, having lost his sight in the great explosion of the Tradeston mills in Glasgow, Scotland. Mr. Oexle is the general agent in the United States for the porcelain rolls.—N. W. Miller.

It is reported that a new national telegraph company is being organized in New York, which will break the present monopoly of the Western Union. We hope it is true. The Western Union has had its own sweet way long enough. A little good substantial opposition will be appreciated by the American people.

AFTER January 1st the Government will send, free of transportation, a thousand silver dollars for \$1,000 in greenbacks, to any part of the United States.—Ec.

Now, this is the way it ought to be. We have been waiting patiently for a long time to have the Secretary of the Treasury make this order. We intend to send on our \$1,000 greenback notes next week at 2 p. m., and the Secretary had better set his boys to work, counting out the "daddy dollars."

THE October number of the Millstone has an extended article with profuse illustrations on the subject of GIN. We had hardly expected to hear from any unless our British neighbors on this subject, but Brother Emery appears to be well posted. One of his illustrations shows Emery's Universal Gin. We suppose that is his favorite brand. He refers also to Cotton Gin. We infer from the article that the cotton makes its appearance after treatment with the gin.

We have just received a copy of the new catalogue of Messrs. Griscom & Co., manufacturers of Millstone Dressers at Pottsville, Pa. The following has been said of these machines: "They will do as much work in an hour as can be done in a day with a pick. They will do a better quality of work than can be done with a pick. They save much tedious and hard labor. They save the time of the miller. They save the time of the millstone. They improve the quality of the flour. They are the best millstone dressers in the market."

We have recently received a letter from Prof. Thomas Holloway of London, England, in which he charges one J. Haydock, of New York, of unlawfully representing himself to be the agent of the original Professor and his pills and ointment in this country, and he warns publishers against making advertising contracts with Haydock, expecting to get their pay from him (Holloway). We don't like to swallow pills or rub in ointments, Holloway's or anybody else's, but we will say that if any one is trying to steal Mr. Holloway's reputation or to swindle newspapers, they should be shown up loud.

THE ST. LOUIS MILLER.—Messrs. Wm. L. Thomas and K. H. Stone, the present proprietors of the St. Louis Commercial Gazette, one of the most valuable commercial publications in the Southwest, will issue in December the first number of a new milling paper called the St. Louis Miller. It will be published bi-monthly, and will be—like this journal—an independent milling paper, and not an advertising sheet published for the purpose of selling machinery handled by its publishers. Messrs. Thomas & Stone are experienced newspaper men, and we doubt not will publish a paper worthy of an extensive patronage.

THE New Orleans Price Current says: "Our river front, for a distance of about four miles, begins to have a crowded appearance. The tide of busy humanity on our streets swells day by day; by every avenue of travel they come, and the city now has almost fully recovered its regular business aspect. The wharves are lined for a distance of several miles by steamboats, either discharging or taking in cargo; other miles in length of the city front is covered with steamers and sailing vessels ready to take to foreign and domestic ports the produce freighted down our great natural highway, the Mississippi, and the number of ocean-going vessels is steadily increasing and bids fair to be sufficient for all possible demands. Great preparations to forward grain in bulk from the West to Europe via this port, the present season, are in progress, and we confidently expect a vast increase over the

already large shipments of last season. The facilities for handling the grain are here, the men who understand the business are on the spot, and, as every charge has been reduced to the lowest possible point, there can be no doubt that Western shipments to Europe can be handled here at as low if not lower rates than at any other seaport in the United States."

HARRIS - CORLISS ENGINE WORKS, PROVIDENCE, R. I.—These works are quite busy in building a large 350 horse-power engine for a large flouring mill at La Crosse, Wis., and other engines of smaller power for other Western States. They report some improvement in business in their line. Mr. Harris, the founder and mechanical head of these works, is a man of great force of character, thoroughly progressive, and has for some years been regarded as one of the best engine builders of our country. He has become very popular in the West through the great success of his engines, scattered as they are through nearly every Western State.

THE PROGRESS, a handsome new Philadelphia paper just out, concludes an article on the United States Patent system by saying: "That there are defects both in the character of the patent laws and in the administration of them, is hardly open to question, and we will have occasion hereafter to speak of some observed defects, and will labor to secure the appropriate remedies for their correction. No doubt a separate judicial tribunal, whose jurisdiction should be confined to the adjudication of controversies arising out of letters-patent, would go far towards remedying many of the defects of the present system. But whatever may be its defects, the patent system of the United States is probably simpler and better than that of any other country, and to our inventors, through the protection it holds out to them, our country is largely indebted for the progress that it has attained and the rank that our nation holds among the nations of the world."

THIRD ANNUAL MEETING OF THE WISCONSIN MILLERS' ASSOCIATION.

The following call for the third annual meeting of the Wisconsin Millers' Association has been issued by Secretary Seamans:

WISCONSIN MILLERS' ASSOCIATION,
SECRETARY'S OFFICE,
MILWAUKEE, Nov. 18, 1878.

The third annual meeting of the Wisconsin State Millers' Association will be held at the Newhall House, Milwaukee, Wednesday, December 4th, 1878. The meeting will be called at 2 o'clock p. m. sharp.

A full attendance is expected and desired, as important business will come before the association for consideration—the election of officers, organization of an insurance company, reports of committees, etc.

S. H. SEAMANS, Sec'y.

A WOMAN'S INVENTIONS.

Harriet Hosmer, the American sculptress, during her sojourn in Europe has been turning her mind to inventions. She has invented a neat instrument for turning the leaves of music for the musician while playing; also a new magnetic engine which is driven by power obtained from permanent magnets. It is said that this is a remarkable discovery, and is destined to make a great change in the power used for running light machinery. Miss Hosmer is having a four-horse power engine built on her principle, which she will exhibit in the United States on her return next spring.

Another important invention is of a process for converting ordinary limestone into beautiful marble through the combined influence of moist, heat, and pressure. A large manufacturing establishment in central New York has offered to purchase her patent for this latter invention at a good price.

SCIENTIFIC GHOULS.

As a result of the explorations of Indian mounds around Madison, recently begun by several students of the State University, several skulls and other parts of skeletons, and a number of specimens of ancient pottery have been exhumed.

We clip the above item from the Chicago Evening Journal. It is supposed to interest the general public. In the name of decency, in the name of humanity, in the name of justice, when is this infernal pandering to the morbid appetites of a certain class of men, who rob and despoil graves of the departed, going to be stopped? Great heavens, have not enough of these things been unearthed and placed in the museums of the world to

satisfy the student, or must every numbskull who attends a university have a few skulls and cross-bones, and filthy, uncouth pots and ornaments tarnished by human blood and the touch of age for the gratification of his own morbid appetite and the ghastly amusement of his guests?

If the bones of Lincoln, or Stewart, or Harrison, or anybody else, are disturbed, the cry goes through the land of "Shame! Death to despoilers of our sacred dead!" But lo, your scholars will go and pick out with their shovel and ax the revered remains of former generations. Let this disgusting work stop. Let the dead—whether white, black, red or brown—rest in peace, and let the desecration of the graves of the ancient dead be punished, as is the case of the ordinary modern grave robber.

AMONG other new inventions is one for giving warnings at sea, which, it is said, is now successfully employed in a most dangerous place upon the coast of Bretagne. It consists of a hollow cylinder, a few centimeters in diameter and three or four meters long, closed at the bottom, and containing a pump, worked by a huge fagot floating upon the surface of the sea, whose motion, caused by the rising and falling of the water, furnishes the force. The air is sucked into the pump, compressed and sent out through a whistle, and the sound thus produced can be heard even with the wind blowing against it at a distance of six kilometres, or between three or four miles away. The whole apparatus is secured by an anchor at the bottom of the sea, and has the advantage of being both simple and efficient.

WHEAT CROP OF THE WORLD.—The N. Y. Produce Exchange Weekly gives the following summary: "The English crop is fair; the German and central Europe wheat crop is an average. The American surplus of winter wheat is quickly available and large. A short period of sunshine in the United Kingdom depresses the English market against wheat. The French wheat crop is bad. The harvests of Italy, Spain, Algeria and southern Russia below estimates. The spring wheat crop in America was reduced by excessive heat. India has ceased to export wheat this year in any considerable quantity. Australia has but a limited surplus left for export to the United Kingdom or Europe, the neighboring colonies requiring her available surplus. The wheat producing area of France is estimated to yield 3-10ths rather under average; 2-10ths 20 per cent. short and 5-10ths 30 per cent. deficiency, giving a net yield of say 80,000,000 hectolitres or 28,000,000 quarters, leaving importation to supply 564,000,000 quarters, with economy in consumption say 5,000,000 or 40,000,000 bushels, which will not all be wanted at once, but will be spread over the whole year. The wheat crop of the United Kingdom is estimated for 1878 at 11,500,000 quarters from a total acreage of 3,400,000 acres. The estimated requirements of foreign wheat and flour from September 1, 1878, to August 31, 1879, are 13,000,000 quarters of 104,000,000 bush."

THE Pioneer Press, in speaking of the milling improvements at Minneapolis, Minn., says: There have been or are being constructed the present year the following flouring mills, most of which are running or about ready for business:

Washburn "B".....	30 run
Pettit & Robinson.....	30 "
Anchor.....	12 "
Morrison.....	20 "
Humboldt.....	15 "
Pillsbury's additions.....	6 "

Total.....103 run

In most of these the Hungarian process is being introduced in whole or part, which adds to the expense, so that an estimate of \$7,000 cost for each run of buhrs may be a safe one. This will bring the investment in flouring mills at that point alone for the present year up to the enormous amount of \$686,000. There are to be built the coming year at the falls the following flouring mills:

Washburn "A".....	60 run
Morrison & White.....	25 "
Hardenburg.....	15 "
Warner.....	15 "
Fletcher.....	20 "

Total.....135 run

Work on all but the Warner mill is already under way, and for this building arrangements have already been made in the wall of the big Washburn elevator, which it joins on the east. Nor are these all the mills to be constructed here. There are three entirely new enterprises which have never been mentioned in print, which are almost certain to go forward, and which will very largely add to the milling capacity of the city; but laying these aside, and figuring on those sure to be built, and we have, at \$7,000 per run, an expenditure in flouring mills alone, for next year, of \$945,000, or almost a round million.

PEARLING BARLEY.

BY H. S. NORTHUP.

My experience in manufacturing pearl barley has not been very large, but I have theorized a good deal, and practiced enough to demonstrate that my theory is right. I have found in the course of my experiments that in order to make white pearl barley without grinding off two-thirds of the inside or flour part of the berry, it is necessary to keep the barley very tight between the stone and case, so as to hold the grains flat against the scouring surface, thereby grinding off the sides of the berry before the ends get ground off. If the ends get broken or ground off, before the sides are sufficiently ground, there will be a yellow belt of the hull left on, unless it is ground very fine, which reduces the yield very much. In the common way of pearling with revolving case, the barley cannot be held uniformly tight, for the reason that when a given quantity is put in, it has to remain until finished, and, although it may be packed tight when first put in, it soon gets loose, and before the side of the berry is half done, the ends are off, and, being the softest, grind away the fastest. The facts above stated suggested to my mind the method I now use, which is as follows: I use a stationary case of sheet-iron (or steel, which is better), as thickly perforated as possible with holes or slots three-fourths of an inch long, with convex inside to prevent the barley from going round with the stone and to assist in hulling and discharging the offal. The following is the mode of operating: The stone runs vertically, and should be 20 to 24 inches in diameter, and 15 inches thick or more, according to the capacity required. The grain enters at the center of the stone near the shaft, and discharges at the opposite lower edge, fast or slow, at the operator's option, by the use of slides at the inlet and outlet. The hopper on the machine has a partition, which is so arranged that the feed can be let in from one side independent of the other, so that the barley run from one division through the mill, and is carried to the other by elevator, ready to be let in again as soon as the quantity first put in has passed through, thus going round and round until sufficiently pearled. Pearling barley is a slow operation at best, and there is no way to do it fast and well, without a good deal of power. The barley should be dry, well cleaned, and when partly hulled, should be sized, and each size finished by itself. Parties intending to go into the manufacture of pearl barley, would do well to have it kiln-dried before pearling, as that would not only enable them to use new or damp grain, but would facilitate the pearling of grain in any case. Should this communication prove of any interest to your readers, I may follow it with another in which I will say something in regard to the cause of the comparatively small amount of pearled barley used in this country, and will make some suggestions concerning the removal of the cause.

PROCELAIN ROLLER MILLS IN AMERICA.

The millers of this country, always on the alert for improvements in the art and science of milling, have presented to them for practical investigation the system of crushing wheat by means of porcelain rollers, a system having for its aim the superseding of the present way of treating middlings by the ordinary mill-stone. We present herewith an illustration of a machine which is being rapidly introduced in the flour mills of Europe, especially in those of Austria, Hungary, Germany and Great Britain. This machine was first made known to the millers of Hungary, in 1874, when its inventor, Mr. Wegmann, appeared in the great milling metropolis, Buda-Pesth, and where remarkable success attended its introduction. The inventor is a practical miller and owner of a large flour mill in Naples, Italy, and has spent much time experimenting with rollers for the gradual and final reduction of wheat.

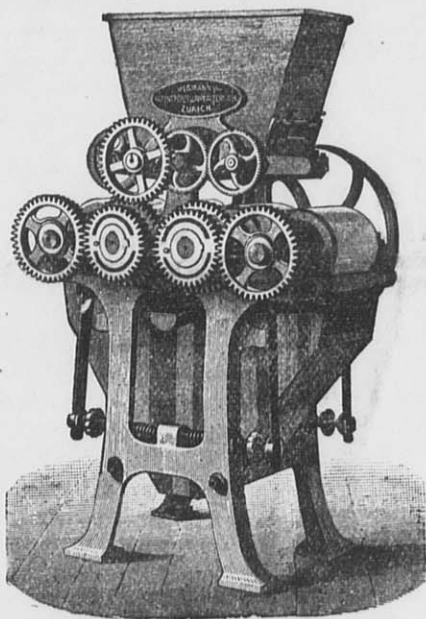
As far back as 1825, roller mills were erected, with more or less success in some portions of Switzerland, Hungary, Austria, Italy, etc., but in all, the cast-iron or steel roller was employed. None of these early experiments were permanently successful with the exception of a large flouring mill in Pesth (the Pesther Walz Muhle), which is to this day making flour entirely by roller.

It is not our intention to treat at length these early roller-mills, but to call attention to the improved machine of which the accompanying cut is a fair representation. There are two pairs of rollers, each having its own function. The two minor rollers have fixed bearings, while the bearings of the two out-

side rollers are movable. Two lever springs are attached to the latter, which can be regulated by hand wheels and screws at lower end of the machine. The middlings, semolina, etc., in passing through the hopper are equally distributed on the two feeding rollers, just above the squeezing rollers, by two adjustable slides attached to the hopper. The principle adapted is by no means new, but the efforts to arrive at the same result by using iron or steel rollers have not proven so satisfactory, not producing a perfect reduction of the middlings into flour. Various other drawbacks, such as continued heating of bearings, injury to roller surfaces by hard substances passing between them, great absorption of water, etc., brought the roller system somewhat into disrepute. The main objection seemed to be the necessity of coming back to the old mill-stone for the reduction of the middlings. Mr. Wegmann has solved the problem by adopting a slight differential speed on his porcelain roller.

The slight tearing action which the meal undergoes during the squeezing pressure of the rollers (the differential speed being only about two inches per second against forty inches under the mill-stone surface), helps greatly to the speedy reduction of the starchy and glutinous particles, and is still not so severe as to pulverize the woody bran particles, germs, and other foreign substances contained in the middlings, which ought not to be pulverized. The inventor claims for the flour thus produced, a very superior quality to that produced under the mill-stone, and that the baking quality is raised by the perfectly cool grinding and the granular shape of the flour. The peculiar, equally porous surface, and extreme hardness of the porcelain roller is of vital importance in producing these results; without them, it would be impossible to finish the grinding process entirely by roller.

The advantages claimed over the ordinary



WEGMANN'S PATENT PORCELAIN ROLLS.

mill-stone are: 1. Great saving of motive power—nearly 50 per cent of the power absorbed by the mill-stone. 2. Production of a superior quality of flour, both in color and strength; making it fit to stand any climate, and thoroughly fit for exportation. 3. Perfect self-adjustment and simplicity in all its parts. 4. Durability of the material (the diamond alone being able to cut it), and no perceptible wear for years. 5. Continuous working action, and no loss of time incurred by stone-dressing, etc. 6. Ability to obtain flour of a very fair quality from middlings which could not otherwise be advantageously ground by mill-stones, owing to their low quality. 7. Simplicity of erection and small cost in comparison with mill-stones. 8. Great safety as regards fire, as no heating occurs should the rollers run empty; even should a nail pass between them the self-acting springs would allow it to pass freely, and the rollers would right themselves immediately without being in the slightest degree injured.

The dimensions of the machine are as follows: Height, 5 feet 6 inches; width, 2 feet 10 inches; length, 3 feet 6 inches. Speed of driving pulley, 180 revolutions per minute; diameter of driving pulley, 23½ inches; face of driving pulley, 3½ inches. The capacity varies according to the quality of the middlings from 2½ to 3½ cwt. per hour. The power required to drive the machine is about 1½-horse power. Total weight of machine about thirteen hundred pounds.

Many of these machines are now working satisfactorily in this country. Mr. Oscar Oexle, C. E., of Augsburg, Bavaria, introduced these roller mills into the United States. He also accomplished their successful introduction into Great Britain. Mr. Oexle has had large experience in roller mills, having built, and managed for some years, the new section of

the Pesther Walz Muhle in Hungary—the largest mill in the world, having a capacity of nearly 4,000 barrels per day. Besides having built other mills in Hungary, he has also erected a roller mill in Glasgow, Scotland, where 1,200 barrels are produced per day—entirely of American wheat. For further information address, E. P. Allis & Co., Reliance Works, Milwaukee, Wis.

RECENT PATENTS.

Patents have been granted, recently, as follows:

Feed water heater and filter, W. J. Austin, Chicago.

Valve gear, Dennis Ladd, Chicago.

Governor and cut-off, Den. Ladd, Chicago.

Corn-sheller, C. C. Burrows, Evansville, Ill.

Corn-planter, W. M. Carriker, Irving, Ill.

Corn-planter, A. Heckman, Sterling, Ill.

Corn-harvester, C. K. Connor, Camp Point, Ill.

Cultivator, F. W. Degen, New Athens, Ill.

Sulky plow, S. Dixon, Roseville, Ill.

Grain-binder, G. T. Gifford, Galesburg, Ill.

Harvester, C. Gregory, Dixon, Ill.

Grain-scourer, Geo. Moensch, Rushville, Ill.

Wind-mill, E. S. Smith, Good Hope, Ill.

Saw-mill, R. E. Gleason, Muskegon, Mich.

Grain-thresher, A. J. Hoag, Battle Creek, Mich.

Clover-thresher, L. V. Southworth, Newport, Mich.

Saw-sharpener, Thos. H. McCrary, Evansville, Ind.

Millstone-driver, J. W. Donnell, Muscatine, Iowa.

Grain-binder, J. F. Appleby, Depere, Wis.

Elevator bucket, W. J. Bennett, Fox Lake, Wis.

Wind engine, J. H. Palmer, Lodi, Wis.

Corn-planter, J. Wright, Delafield, Wis.

THE FALLS THAT WEBSTER PRAISED.

The beauty of the Upper Falls of the Genesee in this city has departed forever, and it has ceased to be an object of much interest to our citizens, except as a source of water power. But an event occurred at the falls, recently, that will awaken a temporary interest in the cataract. All who are familiar with the falls and the formation of the rock over which the water tumbles, know that while the surface rock is limestone of fair building quality, the underlying stratum is shaly and crumbles easily when exposed to the elements. From this cause the rock at the bottom is crumbling away faster than that at the top of the falls, and the latter projects in places twenty feet or more. In time the overhanging portion becomes so much undermined that it has no support and tumbles over in the abyss. Usually the amount of rock falling in this way seldom exceeds a few hundred pounds, but a fall took place last night worthy of mention from its magnitude. The mass that fell over must weigh many thousand tons, and now lies at the foot of the falls on the east side, directly under the building formerly occupied as a flour mill, but now devoted to various kinds of manufacturing. J. T. Cox, who occupies part of the building on the brink, says that the edge of the rock on the precipice for twenty feet back, and extending 100 feet along the face, went over. Its depth must have been forty or fifty feet, from the fact that it forms a pile rising thirty or forty feet above the surface of the river. Formerly the water fell directly from the brink of the falls to the water below in one unobstructed leap, but now it strikes on the mass that went over and flows down the rocks somewhat like the American falls at Niagara. Another large quantity of rock is expected to fall before long, and may carry over the buildings on the east side of the edge of the precipice.—*Rochester Union*.

RESOURCES OF ALASKA.

Instead of being a worthless territory, as was believed by many, Alaska is developing a numerous variety of riches. When California was inhabited almost wholly by Spaniards it was like Alaska, an unworked mine of wealth. The mineral treasures of both countries were unknown and unsought. They had little or no agriculture, and were almost in a state of natural wildness, thinly peopled and overrun by savage tribes. But when these territories passed into the hands of Americans a different condition prevailed,—their resources were brought to light. The streams of California were found to contain gold in limitless quantity. The mountains were discovered to be imbedded with precious ores to unfathomable depths, and in inexhaustible masses. The soil was the richest in the world, and adapted to every kind of production.

And now Alaska, which has been so long

the target for contemptuous darts by superficial writers, is being demonstrated by American enterprise to be a land endowed with solid elements of prosperity. It contains rich deposits of gold, silver, copper, graphite lead, iron, sulphur and coal. Its streams are filled with fish; salmon of the finest quality frequent its inlets and rivers in millions; there are halibut and codfish, and its coasts are the favorite resorts of countless seals. The mountains are densely feathered with pine and ship-building timbers, and there are most excellent prairie lands and pasturage near the coast. The climate is milder, less ridged in winter and less rainy than Scotland. Everything points to it as a future wealth producing territory of wonderful promise. In the hands of the Russians it would have remained for ages the dreary, unproductive and unknown region it was when we found it. But as part of the republic of the United States it will contribute much to our national power and wealth.

NORDYKE & MARMON'S MILLING MACHINERY.

The rapid growth of the grain industries of the West has elevated the milling interests into the realm of science, and necessitated a degree of improvement in machinery that would have been deemed impossible a couple of decades ago. This advancement in machinery and manufactures has contributed, together with its allowance of more complete growing facilities, more than any other industrial item, to the increased greatness and prosperity of this country as a nation. Of the many who have devoted their time, energy, skill and capital to the furtherance of this great object, none rank higher or are better known for the high grade and superiority of their productions than the Nordyke & Marmon Company, of Indianapolis, Indiana. The makes of this company are known, appreciated and used throughout the entire stretch of our country, and from Maine to California not a reputable miller can be produced but has a good word for the specialties of this company. Everything that comports to the necessities or comforts of the miller is to be found within the well-stocked block of buildings occupied by the works of this company. During the past thirty years the company has put into operation in every State and Territory of the country its milling outfits, and has deservedly won the confidence of the milling public. Wherever the miller's work is known the name of "Nordyke & Marmon" is a trademark of superiority and good workmanship. Among a long list of all a miller needs, and which can all be ranged as "specialty" work, when its excellence is considered, may be noted its iron husk mills, now being put into use everywhere; its middlings mills and purifiers; its flouring mills, complete; its grades of shafting, pulleys, hangers, gearing, etc.; its bolting cloths, and all the minutiae which goes into the make-up of a first-class establishment.—*Boston Journal of Commerce*.

The growing wheat in Jasper county, Ill., is being injured by insects.

Cut This Out.

"United States Miller" Subscription Blank.

N. B.—We shall consider all persons to whom this paper is sent by this office regular subscribers until notified by postal card, or otherwise, to discontinue sending it. Payment may be made at any time, or at the end of the year from the time such persons may have commenced to receive the paper regularly. In case of discontinuance we will make no charge for papers heretofore sent. We hope the milling friends of the UNITED STATES MILLER will be as liberal to it as it has been in the past, and will be toward them in the future. Subscription price, one year \$1, or two years and a half \$2. We shall be pleased to have response to this before January 1st, 1879. Fill out the blank below, enclose with money in an envelope, seal carefully and send at our risk. A receipt will be sent by return mail.

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MILWAUKEE, DECEMBER, 1878.

THE Indiana Millers' Association meets at Indianapolis, Dec. 12th.

THE Illinois Millers' Association meets at Springfield, Ill., Dec. 4th.

THE North Pacific Round House at Fargo, burned November 30th. Loss, \$30,000.

A New England canning factory is now putting up 500 dozen cans daily of fish balls to fill French orders.

GEO. B. WRIGHT, of Fergus Falls, Minn., whose saw mill was recently burned, is now making arrangements to rebuild.

WE would like to have some of our readers furnish us with a good article on pearl barley and its manufacture for our January number.

Hulbert & Paige, Painesville, Ohio, are working full force on orders for mill machinery, engines and their Triumph Power Corn Shell-ers.

THE abundance and superior quality of the Kansas wheat is the cause of furnishing excellent flour at our Western markets at cheap rates.

SEVERAL grain warehouses in Minneapolis and along the railroad lines in Minnesota have been temporarily closed for want of cars to ship wheat.

ENGLAND has a couple of small wars on hand, "just to amuse the boys, you know." One is with Afghanistan, and the other with the African Kaffirs.

Kibbie, Maltby & Co., West Farmington, Ohio, have just started their new custom mill, the machinery for which was furnished by Hulbert & Paige, Painesville, Ohio.

THE total grain receipts at Buffalo, N. Y., from the opening of navigation to November 30th, were 84,423,700 bushels. Exports by rail, 26,938,800. By canal, 58,735,502.

THE case of the American Middlings Purifier Company, vs., the Haxall-Crenshaw Company, of Richmond, Va., has been dismissed. St. Louis and Minneapolis cases come next.

E. P. Allis & Co. report that from the increased sale of porcelain rolls, and the character of the work done on them, that they will ultimately entirely supersede stones in the manufacture of patent flour.

Hulbert & Paige, Painesville, Ohio, have recently shipped to Daniel & Whitcomb, Redwood Fall, Minn., engine, boiler, tanks and machinery, all complete, for their new wheat elevator.

Messrs. Hulbert & Paige, Painesville, Ohio, have just completed a five-run flouring mill, with one of their improved Corliss engines, for Burdick & Dynes, Owatonna, Minn. H. & F. L. Walters, millwrights.

OUR friend, Mr. A. L. Clarke, of Milwau-

kee, who has been more or less identified with the milling machinery interests for the past three years, leaves soon to accept a position with the new *St. Louis Miller*.

THE flouring mills at Prague, Bohemia, burned recently. Fire caused by flour dust ignited by friction on bearings in the upper story of the mill. Loss \$40,000. Mills will be rebuilt.

THE Marquis of Lorne, the new Governor-General of the Dominion of Canada, and his wife, the Princess Louise, have arrived at Montreal, and have been greeted by an enthusiastic reception.

RECENT tests on a Russian railway prove that tires shrunk in hot water possess great advantages over fire-shrunk ones. Only one per cent of the former needed overhauling, to forty-two per cent of the latter.

MERRY CHRISTMAS.—We wish our readers one and all a Merry, Merry Christmas. We hope they will all enjoy plenty of roast turkey and plum pudding, and that Santa Claus will not forget to call on them and theirs. So mote it be.

AUSTIN, EMMET, of Norwalk, Conn., has invented a method of propelling canal boats by "chain propellers," which do not disturb the water, and the cost of which, it is claimed, will be but fifteen cents per mile, against twenty five cents by horses.

THE Wisconsin Millers' Association meets in Milwaukee December 4th, so that it is impossible to have the report of their proceedings in this issue. We hope their future meetings will be so timed that their report may be published in papers issued on the first of the month.

Nov. 26th, the steamer Pommerania, bound from New York to Hamburg, came into collision with the bark Noel Eilian while on her way from Plymouth to Hamburg. Over fifty lives were lost. The steamer sank in twenty minutes. Cargo for Hamburg valued at \$250,000, and the mail, is a total loss.

WE would respectfully call the attention of our readers to the new advertisement of the Huntoon Governor, manufactured and sold by the Huntoon Governor Company, of Lawrence, Mass., and their authorized agents through the country. We shall at an early day publish a description of this perfect and reliable Governor.

THE Milwaukee saloon keepers have organized a "ring," now, and have commenced making demands on the brewers and pop makers for reduction of prices to the ring, higher prices to private customers, and to shut off the supplies of the "2 glasses for 5 cents" dealers. The majority of the beer-drinking public are rather inclined to support this latter class in their efforts to sell beer at *hard-pan* prices.

IN the twelve months from the 1st of September, 1877, to the 31st of August, 1878, the imports of wheat and wheat flour into the United Kingdom amounted to less than 62,255,125 cwt.; of Indian corn, 40,746,135 cwt.; of barley, 14,201,373 cwt.; of oats, 12,286,354 cwt. Adding also peas and beans, the total importation of grain in the twelve months reached 134,430,348 cwt. In neither of the two preceding twelve months did the imports of grain reach 119,000,000 cwt.

H. A. CHITTENDEN, the founder of the Milwaukee *Journal of Commerce*, the *Daily Commercial Times*, and latterly one of the proprietors of the Milwaukee *Daily News*—the official organ of the city of Milwaukee and the leading Democratic newspaper—has sold out his interest here and is going to New York to enter a wider journalistic field. Mr. Chittenden has shown great energy and ability in his journalistic career in this city, and his numerous friends in this State will regret to have him leave. We wish him success in his new venture.

VOSE'S COURSE OF GEOMETRICAL DRAWINGS.—We have just received from the publishers, Messrs. Lee & Shepard, of Boston, Mass., a handsome copy of a new work entitled "An Elementary Course of Geometrical Drawing," by George L. Vose, A. M., Professor of Civil Engineering in Bowdoin College. The work is handsomely printed, and illustrated by 38 full page plates. It contains problems on the right line and circle, conic sections and other curves, the projection section, and intersection

of solids; the development of surfaces and isometric perspective. The work has been prepared for the use of classes in engineering schools, and also for those who intend to pursue this branch of study for themselves. We commend the work to civil and mechanical engineers, students and draughtsmen in general. The price of this valuable work is \$5, which is extremely low considering the nature of the work.

A CITIZEN of Brattleboro, Vt., has produced what is known as the "Curtis Screw Machine." As described by the inventor, it feeds itself, cuts off a piece of iron of the required length, trims it down to the proper size, cuts the screw, shapes the head, makes the slat, rims it, and throws it out a perfect screw, the operator having nothing to do but to look on and watch the process. The invention is patented here and in eight countries of Europe.

J. B. CROMWELL, of 480 Canal street, Milwaukee, has invented a millstone detachment so that one or more stones set in line may be disengaged without stopping the rest of them. It obviates the necessity of stopping the mill to put on a stone, and keeps the flour more uniform. It can be attached to any spindle without alteration, the pulleys and gear being split. This detachment is now in successful operation in E. Sanderson & Co.'s Phoenix Mills, Milwaukee, where it can be seen. No merchant mill should be without it. We congratulate our townsman on his happy invention. Mr. Cromwell is also patentee of an excellent wheat heater, of which we will speak at a later date.

A NOVELTY IN MILLING.

IN our January issue we shall present to our readers a thorough description with illustrations of the new mill erected on the corner of Canal and Cherry streets, by the Milwaukee Milling Company. It contains 30 run of the Johnathan Mills' patent mills, and, when in operation, which will be in a few days, will be one of the neatest and most novel flour mills in the world. All the stones are 16-inch face.

KANSAS FLOUR.—The millers in Iowa complain bitterly of the course taken by Kansas millers in flooding the best markets in our State with their flour at such low prices. They would not object to straight competition at fair prices, but the millers of Kansas bid against each other so sharply in their endeavors to furnish this flour that they have put the price below living rates. The quality of Kansas wheat being so much superior to that raised in Iowa, and as the flour from it can be bought at even a lower price than the flour can be manufactured from Iowa wheat, of course it takes away a very large share of the home trade, as the wheat cannot be shipped from Kansas and ground at present prices, our millers are feeling rather blue about it. A few years ago a petition came up from starving Kansas for bread, and our millers generously ground, free of charge, all the wheat the farmers donated, besides sending many a barrel of their own. Their bread thus cast upon the waters comes back after many days, but not in a very acceptable way to them.—*Iowa Millers Registry*.

REVIEW OF THE MARKETS.

WHEAT—Has ruled without material change since our last. The weather has been exceptionally fine for the season and advices from the northwest indicate that farmers are improving the opportunity for threshing and hauling. Receipts at the western stations are consequently large and promise to increase rather than diminish, but it appears unreasonable to expect a continuance of the present weather. Receipts at the western primary markets have again been large, footing a total for the week of 2,410,000 bushels, at Chicago, Milwaukee, Toledo, Detroit, St. Louis and Cincinnati—while the receipts at New York, Philadelphia and Baltimore for the same time have been 2,599,000 bushels. The movement far exceeds any previously recorded year, but despite the tremendous receipts for months, our accumulated supply is not without parallel and we note a reduction of the stock in sight the past week. Probably the greatest surprise to the trade during the present crop year has been the astonishing demand from the continent of Europe. For months past we have heard from the seaboard that France, in keeping with her past record as a buyer in the American markets, has been overstocking, and that it would be but a short time when we should be convulsed by resales for continental account. At each pause in the demand we have been told that the premonitory symptoms

of that convulsion were now apparent, and the speculative trade with much reason has been in constant dread of it. It has not come to pass and the mistaken prophets continue to wait and to watch for the event, while the tide of supply moves outward from Atlantic ports at the rate of over 2,000,000 weekly, and now at the close of the season of inland water transportation, New York, with nearly 7,000,000 afloat, in store and near at hand, gives symptoms of increased strength, and Europe sympathizes by a tendency to rise, with the puzzling reports by cable of light stocks and moderate supply. It appears to us that the only conclusion to be deduced from the foregoing statements, is that we have greatly underestimated Europe's wants, and that wheat at 40s. commands buyers from such remote districts as Portugal, Spain and Italy, and that while the consuming capacity at home is increased by low prices, the avenues for export are more numerous and enlarged.

If our market should be tided over the adversities of December, holders will find in January lighter receipts, a clearer financial atmosphere at home and abroad, more confidence generally, and with the approach of spring, fears of the coming crop, and if not a European war, much talk of it. We shall have heavy stocks, but the price warrants a great accumulation, and it appears to us that diminished receipts are now the only thing needful to a decided change in current opinion regarding the future of the exports.

Corn has ruled somewhat stronger, and we note a growing feeling of confidence. Reports of disappointing out-turn in the crop of 1878 continue to multiply. One of the largest buyers of Iowa takes up the report we hear from so many points in Illinois and pronounces the crop of 1878 grossly exaggerated in quantity but exceptionally choice in quality. The foreign demand is reported disappointing by our seaboard correspondents, and we do not expect the growing feeling of disappointment regarding the crop to have any immediate effect upon values.

EXPORT FLOUR INSTEAD OF WHEAT.

We have always claimed that it was for the interest of American millers to use every means to change the present practice of exporting grain into that of exporting flour, thereby giving our flour mills and millers the benefit of the labor and profit of manufacturing the grain into flour. We have even gone so far as to urge the putting on of an export duty on wheat and allowing flour to go out free, and we sincerely hope that at the next meeting of the Millers' National Association that they will take this subject under serious consideration, and take the necessary steps to secure an increase of our flour shipments and a corresponding decrease in our wheat shipments, thereby ensuring great benefit to our millers and farmers.

In speaking of this subject, a Pacific coast paper of extended circulation, called the *Resources of California*, says: "The present shipments of grain from California and Oregon lose all the benefit that is derived from their reduction into flour. With a prospective surplus of 600,000 tons of wheat for export from California during the current year, our milling capacity represents hardly more than one per cent of the amount, as available for foreign markets in the shape of flour, after deducting the requirements for home consumption. The remaining 540,000 tons will have to be exported in the form of grain. The advantages that would accrue to our farmers and merchants, and to the interests of the State generally, from the shipment in a more concentrated form of our chief agricultural staple, need hardly be dilated on. The saving of freight on mill refuse, and the abundant and cheap supply of feed for cattle which it affords, and which could be made available to a large and profitable extent, are benefits that must appear obvious at the first glance. If the bulk of our wheat crop could be exported as flour, there is probably no interest that would suffer by the change, while all of those dependent on its production would derive the most material advantages from it. Any reform that will enable us to land our bread-stuffs in Europe in a more compact shape, and at less cost than under the present system, is also most desirable for other reasons. We already find ourselves confronted with strong and growing competitors in the markets which until recently were almost exclusively dependent on this country for their grain supplies. Australia and British India are putting forth all their energies to secure a share of this lucrative trade, and with an amount of success which it would not be wise in us to ignore. It is also probable that recent political changes in Europe will lead to an extensive cultivation of cereals in the fertile districts of Asia Minor, which have for ages been excluded from commercial intercourse."

MILWAUKEE MIDDINGS PURIFIER.

Manufactured by Smith Bros., Milwaukee.

We have the pleasure of presenting to our readers this month an illustration of the well-known Milwaukee Middings Purifier, manufactured by Smith Bros., millwrights. This machine has been used for years by the leading mills of Milwaukee and elsewhere, and has given unqualified satisfaction. It may be described as follows:

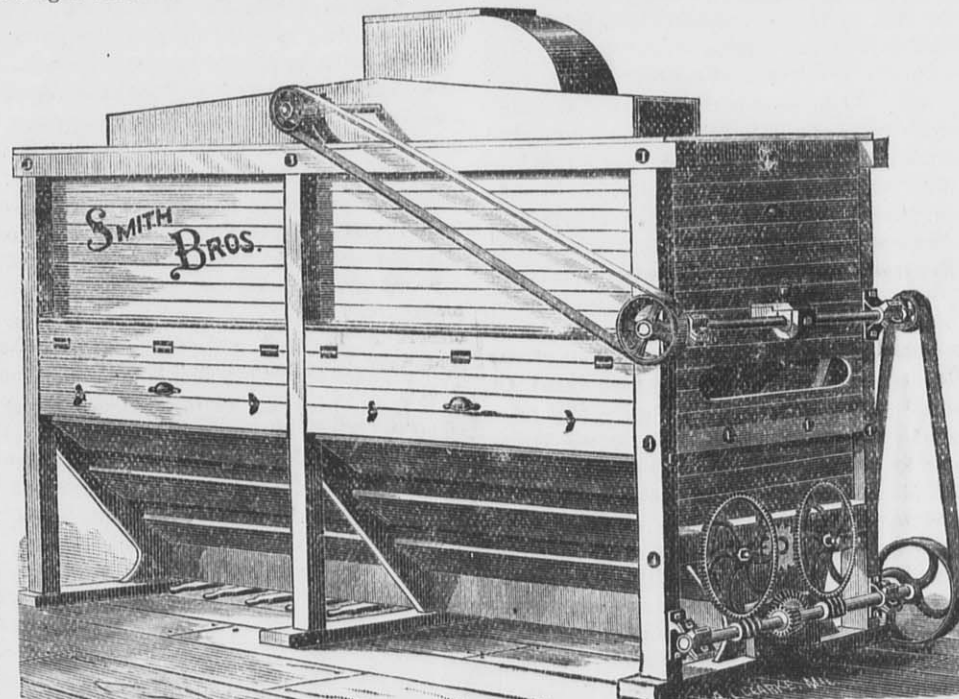
The interior of the purifier consists of a reciprocating shaker so constructed as to place therein sieve frames, four in number, to fill the whole length of the shaker. These frames can be taken out and others with different grades of cloth put in in five minutes' time; or if the grade of cloth should be too fine to suit the grade of middlings, one of the finest of the four sections can be taken out, the remaining ones shoved to the head and a coarser grade put to the tail, and vice versa if too coarse. This is a great saving of bolting cloth. By taking out one sieve, three-fourths of the cloth remain and the desired change is made, while in all other machines the whole of the cloth has to be discarded. A reciprocating brush traversing the under side of shaker from side to side to keep the meshes clear. By means of a suction fan a current of air is forced through the sieves which can be regulated to suit the grades of middlings, and is also equalized over the whole surface of the sieves by means of troughs, these being attached to the shaker above the cloth so as to increase the draught as it leaves the cloth to the upper edges of the troughs, where they form a vacuum, by which means the heavier particles of the suckings are deposited in them and conducted to the tail end into a hopper-spout leading from the machine; thus leaving this portion of the suckings comparatively clean and in a place where it can be got at, and manipulated as desired, while the lighter, browner and fuzzier particles are buoyed up and blown into the dust-room.

THE HISTORY OF ART.

Sir John Lubbock recently distributed the prizes to the students of the Maidstone School of Art, and subsequently made the following remarks:

The history of art is one of the most important keys to the true history of man—the history, not of wars and conquests, but of peaceful development. It is really the true history of the human race. The earliest drawings we possess are scratched upon bone or stone, reminding us of the first sketches of Giotto, who, when a child some ten or twelve years old, was found by Cimabue drawing sheep on a piece of smooth slate with a sharply pointed stone; and in the same way the most ancient men of whom we have any certain knowledge, sketched outlines of the mammoth, of reindeer, bears and other animals on bone and stone, probably with a sharp pointed flint. These drawings, moreover, are of special interest, because the skill with which they are executed seems the more remarkable if we recollect that some existing savages are said to be unable to recognize delineations of natural objects when they are put before them. The ancient drawings, moreover, are of special interest, because I think we may fairly hope that just as the Esquimaux drawings of the present day, which, by the way, singularly resemble those found in the caves of Western Europe, represent and would give us a fair idea of their daily lives and avocations; and we may hope also that they will clear up much of the mystery of the past, on which even now they have thrown a bright thread of light. It is curious that, while in the Stone Age we have spirited representations of animal life, the ornamentation of the later Bronze Age, so far as it is known to us, is almost confined to lines, straight, curved and especially spiral. Whether this difference indicates an ethnological distinction we are, perhaps, hardly yet in a condition to predicate with confidence. That absence of representations of animal form under certain circumstances by no means necessarily implies any want of power, we may see clearly, from the fact that while striking representations of every day life illustrate the Egyptian tombs of one period, as for instance that of Ti, at Takkarah, and mystical allegories, those of the Kings at Babel Moulak, opposite Karnak, the minor passages and chambers of the earlier dynasties, as for instance, in the great pyramids, are left quite plain; while, on the other hand, the high pitch to which art even then attained, is shown by the statue of Cephren in the Boulak Museum, certainly one of the most remarkable which the world has yet produced. The tombs of Babel Moulak teach us another curious lesson. Among all the in-

teresting wonders of Egypt few things perhaps are more striking than the tomb of Sethi I. This King is said to have connected the Red Sea with the Nile by a canal. He was the predecessor of Rameses the Great, who again was succeeded by Menepthah—the Pharaoh of the Exodus. In excavating these rock-cut tombs, the first thing was of course to form the chambers, which were cut out one by one, then the walls were smoothed, after that the figures were put in roughly, then came a draughtsman, who drew them carefully in black chalk, then the master, who corrected with a red pencil any fault in drawing—I do not know if this is the mode followed in the art schools of the present day—and lastly the designs were carefully painted in. Now, in Sethi's tomb we see every stage of this process. The innermost room is quite rough and unfinished—being now probably just as it was when Sethi died. In another we find all the different stages of the drawing. In one part of the walls, even in the present day, you can see where the figures are merely indicated—the head, for instance, being a circle, the hands without fingers, and so on. Then in another you have the outlines carefully filled in by the pupils, and still showing here and there corrections made by the master hand. And lastly the complete work. Again, here is another illustration of the important light which art throws upon history. The students of Central American history, in seeking for the source of that remarkable civilization, owe much of what little light they have been able to obtain from the remains of the art of the period, in which some have thought themselves able to trace indications of Chinese, others even of Egyptian influence. It would be easy, if time permitted, to bring together many illustrations of the light which art throws on history; still



MILWAUKEE MIDDINGS PURIFIER.

more important, however, is the general influence which it exercises on the character of man.

The excuses of idleness.—Now, we often hear people say that they have not time enough to give attention to art, but this is too often rather an excuse than any indication of industry. At any rate, even if true in individual application (I have no doubt it is true in some cases—I might claim to be a case in which it is), as a general rule people—or I will at any rate say many people—are sorely in need of interesting occupation. One day last week, in walking from the city to the House of Commons, I found the Thames embankment crowded with men and women, who had come to look over the wall because it was expected that the tide would rise against the stones a few inches higher than had ever been known before. This showed that they had not much of interest to do. One characteristic of the present age is a certain restlessness and craving for excitement. Nothing, however, is more calming and soothing than art. One great master, indeed, has said that it is impossible to draw unless you are in peace. In words which no doubt are well known to you, he says: "Painting can only be done in calm of mind. That peace must be rendered habitual, as the waters settle themselves into clearness as well as quietness. You can no more filter your mind into purity than you can compress it into calmness. You must keep it pure if you would have it pure; and throw no stones into it if you would have it quiet." But, however this may be—whether calm be indispensable to true art or not—one can deny that the contemplation of beauty tends to soothe the mind, and distract it alike from petty troubles and deeper sorrows. So much has public taste improved of late years, that there is now really

no reason at all why we should, any of us, even the poorest, have anything ugly in our houses. Beauty costs nothing. An ugly paint costs no less than a good one; a clumsy glass, or jug, or cup, or ugly table cover, is as expensive as a more graceful form and more beautiful design—nay, costs less really to produce, because the one is a product of mere slavish drudgery, and the other is a triumph of loving art, which can but raise and ennoble the artist who designed them. Now, while I wish to congratulate most sincerely those to whom I have just had the pleasure of presenting prizes, I am sure that I need not impress on those who have not yet been so fortunate that they should on no account be discouraged.

Perseverance Conquers.—Sir Joshua Reynolds, in his discourse to the Royal Academy students, was never tired of impressing on them the necessity of continuous, patient and devoted labor. In almost every one of the fourteen discourses which he delivered as President of the Royal Academy, he is most careful to impress this great truth on the attention of his auditors. Indeed, every page in the lives of the most eminent painters show us that no part of their lives was ever spent in idleness or dissipation. Even of Raphael himself—whom many think, perhaps justly, the greatest of them all—and Michael Angelo, perhaps the second, we were assured, did not possess their art from nature, but from long study. "To be convinced," says Sir Joshua, "with what persevering assiduity the most illustrious and highly gifted of them pursued their studies, we need only reflect on their method of proceeding in their most celebrated works. When they conceived a subject they first made a variety of sketches; then a finished drawing of the whole; after that a more correct drawing of every separate

Something more than this is required, or the result, even with these advantages, will, after all, be but a melancholy failure; as when Robespierre, at the so-called feast of the Supreme Being on the 20th Prairial (8th June, 1784), intending to burn down the symbolical statue of Atheism with its attendant vices, accidentally set fire to that of Wisdom instead. The object must be considered as well as the subject. "The difference"—and here I will conclude with one more quotation from Ruskin—"between great and mean art lies, not in definable methods of handling, or styles of representation, or choices of subjects, but wholly in the nobleness of the end to which the effort of the painter is addressed. It does not matter whether he paint the petal of a rose or the chasms of a precipice, so that love and admiration attend him as he labors and wait forever upon his work. It does not matter whether he toil for months upon a few inches of his canvass, or cover a palace front with color in a day, so that it be a solemn purpose that has filled his heart with patience or urged his hand to haste. And it does not matter whether he seeks for his subjects among peasants or nobles, among the heroic or the simple, in courts or in fields, so that only he behold all things with a thirst for beauty, and a hatred of meanness and vice." And with these words I will conclude the short address I have ventured to make to you this evening. Once more I must congratulate those who have carried away prizes. I would impress upon all the advice of the greatest English painter, that merit can only be arrived at by great labor and continued exertion. Also the noble words of Mr. Ruskin which I have just read: In whatever department of art you may toil, endeavor to do everything in a thirst for beauty and a hatred of meanness and vice.—*Scientific American.*

THE FRENCH DAM BELOW PITTSBURG, OHIO.

Three years ago Congress appropriated \$100,000 for the construction of a Chamoin dam at Pittsburg, under the direction of the War Department. The construction was begun during the past summer. It is intended to form slack water to the two rivers which unite at Pittsburg and form the Ohio River, to create a harbor six miles long for the commerce of the city.

The peculiarity of the French dam is that it is the dam of low tides. That is, it is a dam which is set up against the stream when the stream is low, diverting the water into a lock, after the manner of a canal, and falling in ordinary time prone on the bottom of the river, allowing navigation to pass over it in its usual course. The dam is raised or lowered by means of a series of props which are handled by a simple process. The gate of the canal is opened and closed by hydraulic power operated from a gigantic tank at an elevation on the river bank. In detail, the French dam, which has received the name of Chamoin, after its inventor, is simply an extended series of wooden wickets from four to six feet in width, and from ten to fifteen in length, placed side by side on end on a stone platform, at an angle of eighty degrees (from the horizontal) across a river bed. Each wicket as it faces the stream has behind it a cast-iron prop, whose lower end is adjusted when the dam is up in a hurter or catch, at the head of a slide on the platform of the structure, along which it can be lowered at pleasure, the wicket falling with its prop; the whole dam being let down by degrees according to the necessity made by the rising water. Such is the character of the dam which is everywhere employed for the improvement of the low tide rivers of France; which converts the Saone, the Meuse, the Marne, the Yonne, and the Oise into navigable slack water, and the Seine from its head waters to Rouen into a canal.—*Scientific American.*

ESTIMATED YIELD OF THE WHEAT CROP OF 1878

The yield of the last wheat crop, spring and winter, of the States mentioned is estimated as follows:

	Acres.	Av bus.	Yield bus.
Illinois.....	2,324,000	13	30,212,000
Missouri.....	1,700,000	11½	19,550,000
Kansas.....	1,600,000	14½	23,200,000
Nebraska.....	1,070,000	12	12,840,000
Wisconsin.....	1,780,000	9	16,020,000
Iowa.....	3,240,000	7½	24,300,000
Minnesota.....	2,360,000	10	23,600,000
Total.....	14,074,000		149,722,000
In 1877.....	11,048,055		160,294,000

This, as can be seen, is nearly 200,000,000 bushels less than a year ago on more than 3,000,000 acres greater area; and now that the harvest is over, and we have some reasonable data from which to estimate, these figures will be found to be more than 6,000,000 bushels less than the boasting articles that were published in many of our Eastern as well as our Western newspapers in June last.

THE DELETERIOUS USE OF ALUM IN BREAD AND BAKING POWDERS.

Alum being Substituted for Cream of Tartar.

BY HENRY A. MOTT, JR., PH. D., E. M.

Having been appointed Chemist by the United States Government for the Indian Department, it became my duty to submit to chemical analysis, among other articles, the various baking powders offered the Department, and as a result of my investigation I found that at least 50 per cent of the baking powders offered were grossly adulterated. After making this discovery I determined to submit to analysis every baking powder I could find on the market, and to expose such powders as were adulterated, so that the public may be warned from purchasing them in the future. The number of baking powders I have examined amount to *forty-two*—twenty-nine of them from various sections of the country having been offered to the Department, and thirteen obtained from various grocery stores throughout the city of New York.

Instead of the baking powders of commerce being composed alone of those constituents which have been demonstrated to be perfectly harmless and wholesome, the public have imposed upon them powders largely adulterated with most injurious and hurtful compounds, put up in cans neatly labeled "chemically pure," as if that fact (?) had anything to do with rendering the powders wholesome. Scheele's green (arsenite of copper) is often "chemically pure," but it is always a deadly poison.

It, therefore, becomes necessary for the benefit of the public to examine into the powders on the market, and to denounce such of them as are composed of constituents detrimental to health.

The best powders are composed of bitartrate of potash (cream of tartar), tartaric acid, carbonate of ammonia, and bicarbonate of soda, held together to prevent decomposition by a little starch.

The injurious powders are composed of alum and bicarbonate of soda, and often contain terra alba (white earth), insoluble phosphate of lime, etc., etc. The effect of alum when taken internally has been shown by Wilmer and others to produce dyspepsia, constipation, vomiting, griping, and even inflammation of the gastro-enteric mucous membrane, as it is a powerful astringent acting chemically on the tissues. These serious effects will not of course be brought about immediately from the small quantity of alum used in one loaf of bread, but it is certain that persons continuing to eat bread containing alum, will, in time, suffer from its evil effects, and the weaker the constitution the sooner will the effects be noticed.

Duma speaks to the same effect when he says: "It is to be feared that this salt exerts a deadly action by its daily introduction into the stomach, especially in persons of a weak constitution." And other great authorities, such as Carpenter, Dundas, Thompson, Gibbon and Normandy, all agree that the continued use of bread containing alum will bring about dyspepsia and other troubles, and such was the opinion of the late Baron Liebig. The celebrated Pereira considered "that whatever may have been the effect in the case of healthy persons, sick persons did really suffer in that way. In the *Lancet* is mentioned a case in whom dangerous gastroenteritis was apparently induced by a single dose containing between ten to twenty grains of burnt alum. Dr. Parkes, in his work on Hygiene, states that from eight to forty grains of alum, and probably more, have been found in a four-pound loaf of bread.

The effect of alum on bread is to tend to whiten it, and to prevent an excess of fermentation (when yeast is used) when the altering gluten or cerealine acts too much on the starch; but while it accomplishes this object, it lessens at the same time the nutritive value of the bread by rendering the phosphoric acid insoluble.

Sufficient proof, I think, has been shown that alum is a most dangerous element to introduce in baking powders, and it now becomes necessary for the benefit of the public to expose such unwholesome and injurious powders as contain it. Having analyzed the Royal Baking Powder, I find it composed of only those elements which have been demonstrated to be perfectly wholesome and healthful, having for its active principle pure grape cream of tartar instead of the injurious alum used in the following powders. I do not mean by signaling the Royal Baking Powder, that it is the only properly made powder on the market, as there may be others equally

as good. I simply introduce it as I had to select one, and thought the one I had used in my kitchen for years, and which had always proved satisfactory, would be the best illustration.

Out of the many baking powders I have examined, I have selected the more prominent ones that are adulterated, giving in each case a quantitative analysis of the same. The following analysis are of "Dooley's Standard Baking Powder," "Patapsco Baking Powder," "Charm Baking Powder," and the baking powder manufactured by C. E. Andrews & Co., of Milwaukee. The analysis of the last three baking powders given in the first column was made by Professor Robert W. Schedler.

No. 1.	
DOOLEY'S STANDARD BAKING POWDER.	
Burnt alum.....	26.45 per cent
Bicarbonate of soda.....	24.17 "
Sesquicarbonate of ammonia.....	2.31 "
Cream of tartar.....	None
Starch.....	47.07 "
	100.00

No. 2.	
PATAPSCO BAKING POWDER.	
Smith, Hanway & Co., Baltimore, Md.	
Burnt alum.....	19.16 per cent
Bicarbonate of soda.....	23.36 "
Cream of tartar.....	None
Starch.....	57.48 "
	100.00

No. 3.	
CHARM BAKING POWDER.	
Rohrer, Christian & Co., St. Louis, Mo.	
Burnt alum.....	29.60 per cent
Bicarbonate of soda.....	31.13 "
Cream of tartar.....	None
Starch.....	39.27 "
	100.00

No. 4.	
BAKING POWDER MANUFACTURED BY C. E. ANDREWS & CO., MILWAUKEE, WIS.	
Burnt alum.....	22.53 per cent
Bicarbonate of soda.....	21.79 "
Cream of tartar.....	None
Starch.....	55.68 "
	100.00

On reviewing the above analyses it will be seen that, in the "Patapsco Powder," about 20 per cent of burnt alum is used, over 22 per cent in Andrews', over 26 per cent in Dooley's, and about 30 per cent in the Charm. And the manufacturer of "Dooley's Powder" not only has the audacity to put on the market this injurious and unwholesome powder, but to put upon the labels the deceptive statement, "chemically pure."

Not one pound of these powders could be sold in England, as it is against the law to use alum for making bread. Why have we not such a law?

A case is reported in the English Law Reports of 1871-2, 7th Queen's Bench, 135, November 15th, 1871, where a baker was convicted for using alum in making bread.

I could furnish, if it were necessary, analyses of many other alum powders, as at least 50 per cent of the baking powders contain alum; but the above serves to illustrate their nature, and to show the importance of discriminating with a great deal of care when purchasing baking powders. It is far better to select only "standard powders," as the "Royal Baking Powder," for example, than to risk purchasing the many adventurous compounds which are sure to be put on the market by persons who have no higher motive than dollars and cents.

What would become of the above-mentioned baking powders containing alum if they were introduced on the English market? The answer is simple—they would be swept out of existence. It is to be hoped, then, that the public, by refusing to purchase them, will bring to them all the same fate.

By exposing these injurious and unwholesome baking powders, the public must not be frightened from using baking powders when properly made—of which I have already stated there are a number on the market. In fact, baking powders are a great convenience, as the constituents are so combined that their use is always attended with success; and there is no danger of biscuits made with them having an alkaline taste, or being impregnated with yellow specks or streaks, as is often the case when ordinary cream of tartar and soda are used. This results from the fact that the ordinary cream of tartar found in market is adulterated from 10 to 90 per cent with foreign substance; consequently it becomes necessary to change the proportion to be used with every new lot, which can only be correctly arrived at by a chemical analysis of the cream of tartar.

The advantages of using "baking powder" in preference to yeast are, that with the former none of the nutritive parts of the flour are destroyed, a larger yield is obtained, and the result accomplished with a great saving of time, which would otherwise be required to promote the fermentation when yeast is used.

The advantages of using "baking powder" in preference to the ordinary cream of tartar and soda found on the market are not only

that it is more economical, but the results are always attended with success, there being no fear, as stated, of producing an alkaline taste or yellow streaks in the product.—*Scientific American*.

Items of Interest.

Not over one person in three has legs of equal length, and every man should be posted on the relative length of his limbs that he may know which one to use for short and which one for long kicking.

Chicago is now receiving broom corn, of the new crop, from the States of Missouri, Kansas, Texas, Nebraska, Iowa and Wisconsin, and handles more broom corn annually than any other city in the country.

Antwerp imports American barrel flour; this is put into sacks, leaded and designated by some brand, and sent into France without payment of duty. These masters are bitterly complained of by French millers.

The three great Bonanza Kings—John W. Mackay, James G. Fair, and J. C. Flood—were once poor Irish lads. The first is 53 years of age, and possesses an income of \$800,000 a month; the second is 47 years old, with an income of \$500,000 a month, and the third is aged 50 years, with an estimated fortune of \$40,000,000.

The Belgian correspondent of the *Ironmonger* writes in one of his last letters that American edge tools for husbandry and farm purposes are working steadily into that country, whereas the old Sheffield brands are almost totally disappearing. The metal trade in Belgium is dull at the present moment, but the prospects are looked upon as encouraging.

A Minnesota farmer being greatly annoyed by the ravages perpetrated in his garden by a number of pigs, consulted the Town Supervisor as to what he should do. "Shoot 'em—that's what you ought to do," said the Supervisor. A few days after the pigs reappeared, when the farmer proceeded to "shoot 'em" to the number of six good-sized grunners. When the ownership of the pigs was ascertained, it was found that they all belonged to the farmer himself! But he thus got rid of the nuisance.

According to recent reports, there is now great enthusiasm over educational matters in Japan. There are 24,000 common schools in the Empire, with an average attendance of 2,000,000. There are 216 high schools, with an average attendance of 18,000, and 90 normal schools, with an attendance of 8,000. The course of study in the common schools is similar to that in this country, and the schools, generally speaking, have been modeled on the American plan. The teachers number 45,000 and are licensed by the Government Board of Education.

A writer in a foreign technical journal expresses a decided preference for soapstone powder, in the form of dust, as a lubricant for the axles of machines. For this purpose it is first reduced to very fine powder, then washed to remove all gritty particles, then steeped for a short period in dilute muriatic acid, in which it is stirred until all the particles of iron which it contains are dissolved. The powder is then washed in pure water to remove all traces of acid, after which it is dried, and is the purified steatite powder used for lubrication. It is not used alone, but is mixed with oils and fats, in the proportion of about 35 per cent of the powder added to paraffine, rape, or other oil; or the powder may be mixed with any other of the soapy compounds employed in the lubrication of heavy machinery.

Reports from the Island of Jamaica to the 26th of October, report trade in a greatly depressed condition. There is also a perfect stagnation in agricultural business. Such a depression has not been known in the island for seventy-five years. The failure of Cottam & Norton's house in London has had the effect of sending several sugar plantations into ruin. They are now being abandoned, and the proprietors, in some instances, find it difficult to take other estates, burdened as they are with mortgages and other considerations. Sir Anthony Musgrave, the new Governor of this colony, is about to introduce a railway bill for the opening of the interior of the island, where there are no means of bringing the produce of the colony to a market. The Government proposes to buy out the Jamaica Railway Company, and to take the matter in hand by the payment of \$400,000 and extending the line first to Porus, at the foot of the Manchester Mountains, which is the great coffee producing district.

WHAT WINTER WILL BE.—Professor E. J. Couch, of Grand Junction, claims the predic-

tion made by him a year ago that the year 1878 would be the beginning of a series of years of unfavorable crops in this country, has so far proved true. He ascribes the failure to excessive rain during the blooming season of plants. Plants possess sex, and rains are unfavorable during the blooming season. He says the season of 1879 will be generally dry. The winter, with the exception of a cold spell from about December 12th, reaching its maximum about the 22d to 25th, will be moderate intensity of cold and snow until about January 22d, when the real winter will set in and continue late. In Northern Europe the cold will be intense. April will be moderate; May bad; June, July and August, hot and dry. Mr. Couch bases his predictions upon different principles than those of Tice, or other persons in this country, and claims to have solved the weather problem, so far as is possible with present knowledge of celestial bodies.

GETTING IN THE BURRS.

The husk frame completed, the next thing in order is to get the bed-stone down in place. After the bed-stone has been placed in position, it should be leveled and centered about where it is expected, or really where it is actually to remain. It can then be fastened by the tightening screws around its periphery, or by whatever other appliances may be used for the purpose. After that is done, the curbing or facing can be fastened around the stone. This should be made of 1½-inch pine lumber, or other soft lumber, and from four to seven inches wide, according to taste. The whole circle requires to be neatly filled around the stone to prevent the meal from leaking through; the butt joints also require to be very neat, as a matter of looks, so that after it is finished it will have the appearance of being one solid circle instead of being constructed of six segments. The upper and outer edge of the circle must be chamfered neatly; the chamfer should be about three-fourths of an inch wide by about three-eighths deep. When this part of the plan has been completed, the bed-stone may be considered located and fixed. It will then be in order to set the spindles.

We may here remark that it is not really necessary to permanently locate and fasten the bed-stones before the spindle is set; it is not an absolute necessity that it should be placed at all for the purpose. The center of spindles can be established without any reference to the stone whatever. The tallow-pot can be fitted and fastened to its place, and the stone afterwards located to suit the center of spindle already established. It is merely a matter of choice or convenience, the one mode of operation being equally as good as the other.

After the bed-stone has been located and spindle set, the tramming must be done. It may be found that the spindle cannot be trammed exactly to the face of the stone; this will probably be proof that the stone is not in true face. To overcome this difficulty there must be assurance that the stone is as near level generally as it can be made. The spindle must be set exactly plumb; the stone can then be faced off as nearly as possible to the tram, care being used to get an even surface so that too much trouble will not have to be encountered in finishing off with the red staff.

The setting of the bush in the bed-stone is now most generally done by the manufacturers; consequently millwrights are now seldom troubled with the job. It is, however, of small importance, as the eye of the stone is prepared for receiving the bush; or otherwise, the bush is prepared to suit the eye, or mortice, in the stone. It is only necessary to fix it in place true and parallel with face of stone, and from three-fourths to one inch below the face. It can thus be temporarily fastened with wooden wedges to hold it in place while it is being permanently fixed, which must be done by pouring prepared calcined plaster around it; this hardens quickly and holds the iron firmly in its place.

Setting the balance rynd in the runner is now a somewhat more difficult job, as mortices have to be cut in the hard stones to admit the lugs of the rynd. After this has been done, and the rynd to its place, the spindle should be put in place and the tram used for fixing the location of the rynd, the center of which should be exactly in the center of the stone. The rim of the rynd ought to be dropped three-fourths to one and one-fourth inches below the face of the stone. After the balance rynd has been centered and fixed so as to bring the spindle in tram, it must be temporarily fastened—best with iron wedges; after which, either lead or brimstone can be melted and poured around it as a permanent fastening. Brimstone is preferable, as it is not poisonous, while the lead is, when ground down in the flour or meal.—*Grain Cleaner*.

Correspondence.

ABOUT THE COCHRANE CASE.

(Washington Correspondence.)

WASHINGTON, D. C., Nov. 8th, 1878.—*Dear Sir:* We see in your November issue a telegram without signature which is published elsewhere over the signature of Geo. Bain, saying "Judge Blatchford drove our enemies from Court and denounced them for seeking to make him a Moot Court." Judge Blatchford allowed the injunction, and did not denounce anybody. The defendants had gone into bankruptcy, and Mr. Harding informed the Court of the fact and withdrew opposition to the grant of an injunction. The Judge made the order, and the next time a case comes up on motion for injunction the Court will have an opportunity to decide whether an order by confession does not make as good a case as a decision by the Court. The Association attorneys tried the experiment of confessing judgment by default in the Denchfield case. We did not suppose that the success of that experiment would induce so early a repetition of it. We would suppose that intelligent millers would ask themselves why it is that they are constantly deceived as to what is going on. Who is it that is benefited by keeping them in the dark?

The profession regards this as a clear back-down, a smart dodge to escape a decision on the merits. The millers may congratulate themselves that they escaped a great danger. Judge Blatchford had before him the entire case of defendants, the defense having been closed before the case was argued. We were very confident of a favorable decision, and therefore wished to have our motion decided. Mr. Harding was just as much afraid of an adverse decision, and so went into Court and confessed judgment to prevent the Judge from expressing an opinion on the merits of the case. What we can't understand is why in dealing with grown up men they can't be told the truth. They have dodged a decision which they feared would be adverse, and have a right to congratulate themselves on an escape from danger for the time being; but to dance and throw up their hats and call this a victory, shows how imminent the knowing ones regarded the danger. Did anybody ever hear of an attorney consenting to an injunction where there was no case for it?

The same questions precisely which they were so much afraid that Judge Blatchford would decide against them, after a hearing as full as it can be possibly before the Court, will come up for final hearing during the current month. We are as confident now as we were that Blatchford would decide the case in our favor on the same testimony. Can any of your readers tell why there is such unbounded faith now on the part of those who were so apprehensive of an adverse decision in New York? It does seem to us that some persons are interested in keeping hope alive to the end. Is there any call for assessments just now? The trial is so near that it does seem they could afford to postpone the celebration until they have won the victory. Yours truly,

THE AM. M. P. Co.

THE BREAD WE EAT.

What a Philadelphian Thinks of It.

(Written for the UNITED STATES MILLER.)

An English writer has set himself to consider the kind and quality of bread the people of England eat. The subject is one of general interest. This writer proves undeniably that the "staff of life" is but a broken reed to lean upon, so far as England is concerned, in these degenerate days. When grain was ground by wind or water power it was ground slowly and in small quantities. Now it is ground wholesale, and the grinding is rapidly finished. It is said that England suffers a smaller evil from the fact of too much wheat being ground in the Autumn and too little in the Spring. Flour, like ground coffee, loses flavor, and tasteless bread begets a craving for condiments and stimulants.

Has it been noticed that in countries where peasants bruise their own corn and bake their own flour, bread is the staple food, even though fruit, vegetables, fish and meat be abundant? The reason is, that good bread supplies in itself the nourishing properties of many kinds of food. It contains albumen, fibrine and gluten; and these make bone, muscle, blood and tissue.

The wandering Arab lives almost entirely upon bread, with a few dates as a relish. This is not because meat is scarce in his part of the world, but he feels no need for it. The Arab, however, would soon have to alter his diet, if

an enterprising English wholesale flour producing company were to set up its mills in the desert.

Now-a-days the axiom that bread is not sufficient of itself to feed a young Christian, has penetrated into the most poverty-stricken quarters; so that one notices the unsightly mess of treacle, the quarter-inch of dripping, or the deadlier yellow grease, in the making of which no cow ever had a share, maternally doled-out for the gratification of little urchins who could bite at plain bread heartily enough, if it were made good and properly out of our excellently milled and nutritious American flour. All this heaps wasteful expense on the households of the poor, where bread, instead of being the chief article of diet, is being eaten less and less.

This important fact is being noticed particularly in France, which, until recently, has been a great bread-eating country. Workmen and servants have come to want meat twice a day; soldiers grumble at getting nothing but plain roast and boiled; a Staffordshire miner knocks down his wife for having served him roast veal three Sundays running, notwithstanding his statement that he was sick of that meat; and thus a cry being raised for a variety in food. There have been established schools of cookery with the intention of trying to teach women how to sophisticate honest joints with unwholesome sauces.

People overfeed themselves and drink too much, as a consequence, without deriving from their mixed diet a tithe of the sinew which their fathers drew from sound bread. Would it surprise the modern discontented workmen to hear that the yeomen of Queen Elizabeth's reign, who drew their bow-strings to their ears, and sent a cloth-yard shaft whistling through a barn door at eighty yards, ate meat about once a week, and lived the rest of the week on bread and cheese?

And as for servants, what would a Belgravian footman think of the Jeames of the last century—the Jeames who often had to do battle for his master with highwaymen, and who was a very tough and healthy fellow, though his nourishment was beef on Sundays only, and a thin mutton soup on other days, with bread—but good bread. A bread diet is not especially advocated, only the purification of the bread, that it may be restored to its proper function as the "staff of life" to those who can ill afford fancy props. Let those who please buy dear meat and bad butter; but also let those who would desire to live largely on bread be enabled to do so. It might be done if half the attention which is paid to checking the adulteration of beer were bestowed on stopping the poisoning of the loaf. Beer has become pretty fair from being constantly looked after. The great brewers have a character to lose. A prosecution would ruin them. Anybody can get good beer by purchasing it in the cask direct from the brewer, but anybody cannot obtain good bread from the large wholesale baking establishments. This is all wrong, and should be changed in some way.

The well-to-do who patronize fancy bread at fancy prices are treated to as much adulteration in their flour as the poor; their breakfast rolls are whitened with alum, which is an astringent, hindering the digestion, and which, also, acts as a corrosive on the tooth, causing the enamel to decay prematurely.

The sick, however, have only themselves to blame if their bread is not pure wheat, for pure wheat yields a grayish loaf, and, if whiteness and sponginess be insisted upon, they can only be obtained at the expense of quantity. Those who seek to escape from adulterated bread by eating brown bread, are very often cheated by admixtures of rye and pea flour.

In England it is the millers who are mainly responsible for adulterations. In America, the trouble lies entirely with the bakers. The bakers use inferior or damaged flour; deleterious substances are used to "doctor up" poor and stale flour. The artful baker takes more pains for the appearance of the loaf than for the quality. Excellent Western flour, which would produce a superior and nourishing quality of bread, if used in its pure state, is ruined daily in the bake-houses of the great cities of the East, by the addition of poisonous compounds, which are used to give the bread a "fancy" appearance. The flour comes from the miller all right, but its purity and nutrition is killed by the bakers.

People who occasionally go into the country, where they get bread made from the freshly-ground flour by housewives who understand their business, are wonder-stricken at the difference between the farmer's bread and the baker's. But it must be admitted that the art of bread-making, even in the country, is in many places a lost art, and the traveler who

should undertake to subsist on bread alone would have rather a rough time of it.

It is too true that the arts of the town have, unfortunately, found their way into the country. All the deleterious compounds that supply the place of the old style yeast in securing fermentations and promoting whiteness are for sale in country stores, and find thousands of customers. It would be almost impossible to enumerate the names of the various chemical preparations that are offered for sale throughout the country, and which are intended to be used in the making of bread. It is almost too much to expect that, as a people, we shall ever be permitted to eat good bread again, notwithstanding the fact that America can boast of producing the best flour in the world. When bakers become honest, and chemical yeast powders and similar nostrums are dispensed with, Americans may look for true and healthy bread, which can be made from American flour.

TOUGHENED GLASS.

How It is Made Every Day in Brooklyn—A Poet Among the Glass Blowers.

It is not generally known that the new process of toughening glass, recently invented in France by M. A. de la Bastie, has already been introduced to this country, and is carried on every day in Brooklyn. Mr. William Cullen Bryant, the venerable poet and journalist, and a number of other gentlemen, recently visited the La Bastie Glass Works, in Delevan street, near Van Brunt street, South Brooklyn, at the invitation of Mr. A. de la Chappelle, the proprietor, to examine into the operation of the new process.

Up to the present time it has been applied in this country chiefly to the toughening of lamp chimneys. These are first made in the ordinary way, complete and ready for use, but as brittle as common glass. A workman then takes them, one by one, upon the end of a long iron rod, and plunged them into a furnace. The chimney is not allowed to fall from the rod, but is held upon it in plain sight. It grows redder and redder until it has assumed a tint which the skilled eye recognizes as indicative of the proper temperature—a temperature which the courteous and clear-headed foreman stated to be 1,500 degrees Fahrenheit.

The chimney, still upon the end of the rod, is now withdrawn from the fire and plunged into the oil bath close at hand. This is a circular iron vessel, perhaps three feet in diameter, standing upon the floor of the works and heated from below. It is nearly filled with melted tallow, at a temperature of about 420 degrees. Around the edge of the bath, and standing in the hot oil, are ten or a dozen small upright vessels, each with a horizontal handle, and all resembling high saucepans with flat bottoms. The lower part of each one of these vessels is pierced with large holes, so that as they stand in the bath the oil comes up to the same level in them as in the body of the bath. Each one is intended to receive a chimney fresh from the furnace.

As the chimney falls from the iron rod into the oil, a great flame goes up from the ignited fat, the chimney being so much hotter than the oil. This, however, is only instantaneous, and dies away, leaving the chimney invisible in the blackened contents of the bath. When a chimney has been placed in each of the high saucepan-like vessels, all are left quietly in the melted tallow some fifteen or twenty minutes, and are then taken out by the numerous small boys, who hover about like little fire-demons, to be by them conveyed to the boiling and washing room.

When they are thus removed from the bath, after having been treated with the hot oil, the chimneys look just as though they were made of gutta-percha. They are completely coated with a thick, brown, fatty substance. This is cleaned off, first by boiling them, and subsequently by hand-washing. The process of toughening is then complete.

The comparative cost of glass which has been subjected to the La Bastie treatment was stated to be about 40 per cent higher than that of ordinary glass. The comparative toughness and durability were illustrated by the written statements of two of our city railroad companies, exhibited by the manager, that since they had used the toughened lamp chimneys they lost but one by breakage where they had formerly lost eight and ten respectively. Further, illustrations were given by practical experiments in the presence of the visitors. Eight of the toughened chimneys were placed over burners and allowed to become very hot. An attendant stood by with a pail of cold water and a brush, and showered the chimneys with the water. Only one broke under this severe test. He did succeed in breaking

another, but not until he took it off the gas and plunged it hot into the cold water. The rest stood firm through all the shower.

A more striking experiment was performed by the foreman, who, with one of the chimneys as a hammer, drove a six-penny nail the whole length into a thick plank. It was repeated by one of the visitors, who doubted what he saw until he had done the same thing himself. As yet Mr. de la Chappelle has made nothing but chimneys of various sorts on a large scale; but he is testing the applicability of the process to other objects, such as plates of different sizes, saucers, bowls and window glass, with a view to their economical production. Specimens of these were shown in his store-room. Thin and delicate plates were allowed to fall to the floor, and even violently hurled upon it from the height of a man's head without breaking; a fall of ten feet or more on hard brick failed to fracture some little glass butter plates whitened with cryolite, so as to look like ordinary chinaware; and the severe shocks sustained by the panes of ground glass which were exhibited suggested the value of this glass for covering green houses. No ball could break it.

The La Bastie process is protected by several patents. The nature of the change it effects in the glass is not thoroughly understood—unless, indeed, by the inventor and a few highly-trained experts. One curious fact was mentioned by the foreman of the Brooklyn works—that fragments of the toughened glass have not the sharpened edges of ordinary glass when broken, and are much less likely to inflict bad cuts.—*New York Sun.*

HOW MANY BUSHELS IN A BARREL?

We have lately been requested to give an answer to that antique conundrum, "How many bushels are there in a barrel of vegetables or fruit?" The subject is of but little present interest in connection with apples, which are so plentiful that a peck more or less in favor of either buyer or seller hardly makes any difference. But in the matter of potatoes or onions it may be worth considering, and we answer: There is no such legal measure as a barrel. The matter is regulated entirely by the agreement of buyers and sellers, either tacit or expressed. The general understanding in the produce trade at the present time is that a barrel contains two bushels and three pecks, and nearly all transactions in this vicinity are made with that understanding.

But many shippers of country produce, back in the country, if measuring produce by the bushel and paying for it by the barrel, require three bushels for a barrel. On the other hand, grocers, peddlers and other retailers in this vicinity, who are compelled to "round up" the pecks which they deliver to their customers, are seldom able to make their barrels yield more than ten pecks. Hence, "barrel" is hardly more definite than "box" as a measure of capacity.

Some years ago a number of produce dealers of Boston, New York, Philadelphia and Baltimore united and had a bill drawn up making the standard flour barrel which holds 196 pounds of flour and 112 quarts dry measure, the legal barrel. The design was to get the bill enacted in New York, after which it was to be urged into other States. After pressing the matter for two years at Albany and expending over \$1,000, the bill was passed but vetoed by the Governor.

It was unkindly suggested that the veto was due to the interference of the big barrel manufacturers in the upper part of New York State. But the matter does not appear to be of very much consequence any way. The custom of selling by weight merchandise which in former times was by measurement is becoming more popular every day even where it conflicts with old legal enactments, still upon our statute books and nominally in force, though practically as dead as the ordinance against smoking in the streets of Boston. Potatoes are now sold from the cars invariably by weight. The same is true of other articles; and it is urged with a good deal of reason, that it would be much more satisfactory to sell eggs by the pound rather than by the dozen.

SHE was a Boston girl. She was visiting her Whitehall country cousins. While walking out several butterflies passed her. "Oh, dear me! what charming little birds! They are perfectly exquisite." "They are not birds, my dear," said her country cousin; "they are butterflies." "O! you don't say so. Then these are the dear little creatures that fly from flower to flower and gather the sweet yellow butter that we use. They are too lovely for anything."

AMERICAN GRAIN FRAUDS.

Under the above caption the *Corn Trade Journal* (London) publishes the following communication from an English grain buyer:

"LIVERPOOL, Oct. 17th, 1878.—To THE EDITOR—Sir: Recent events have brought vividly to light certain deep frauds on the part of the Elevator Company of Baltimore, which, no doubt, will be the cause of completely altering the present system of buying c. i. f. on elevator's certificates. As every importer is aware of the loss in weight, quality, and condition of cargoes of grain from the States, the movement towards ridding the trade of such monstrous losses, now that rumors, since current, are shown to have been justified by facts, will no doubt be a strong and substantial one. Cannot the American trade be worked on the basis of the Danubian, etc., system, viz., delivered weight and condition guaranteed? Yours, etc., N. B."

Upon the same subject the *Liverpool Daily Courier*, of a late date, says:

"Rumors tending to cast discredit upon the Baltimore mercantile community with reference to its dealings with the grain elevators of that city have long been rife, but as the bare word of discharged workmen was deemed insufficient to warrant the impeachment of the directorate, it is possible that these irregularities would in substance have remained unexposed but for the persistence with which David McLeod, ex-assistant foreman in the employ of the Baltimore & Ohio Railroad Company, pursued the authorities of the Corn and Flour Exchange, and thrust upon them the responsibility of an investigation which, now that it has been made, discloses a system of fraud as complete in its arrangement of detail as it is gigantic in its proportions."

"Grain in the United States, as it arrives at the seaboard, is passed through the elevator, a grain warehouse of considerable dimensions, which may be considered to act in the capacity of a public arbiter between shippers and original merchant or others. In this establishment weight and quality were supposed to be carefully investigated for the mutual benefit of the parties interested in the transaction. Bad out-turns latterly have, however, rudely shaken the implicit reliance which seems hitherto to have been placed in the integrity and virtue of the leading spirits of this Baltimore Company; the certificates and weight memorandums, regarded till now as reliable vouchers from trustworthy authorities—reliable, seeing that they were the guarantees of supposed entirely disinterested persons—awoke feelings of distrust, and, as the facts prove, well they might. It was admitted before the inquiry—which, by the way, was held with closed doors—that as each carload of grain (22,000 pounds) was run in the elevator, 100 pounds was deducted from the actual weight; whilst smaller draughts were to pay a toll of 70 pounds. Lighters were mulcted some twelve to sixteen bushels on the load."

"As much as 150 carloads of corn were run into the elevator in one day, and thus, by making a deduction of 100 pounds on each carload of 22,000 pounds, some fifteen thousand pounds more corn was received by the authorities than was placed to the credit of the depositors. This, a witness before the committee of enquiry, stated that the foreman instructed him to do, 'to keep the elevator square,' adding that this clever manipulator ordered him to retain all sweepings and screenings, and deliver the same for his account to a pig raiser of the former, named Douglas. Other charges were gone into, and amongst them one other especially grave, which our corn merchants will testify. It was that when a vessel came up for a particular class of corn a lower grade was delivered to her, and falsified certificates supplied; thus, in a sentence, are the arbitrations, troubles and losses which have fallen on unwary merchants explained away; and whilst accounting for the wide difference which we have supposed existed in the American ideas of prime corn of fair average quality and our own, also elucidates the mystery of the four and even six per cent loss in weight which grain cargoes are now frequently known to show. The sample falsifications we will not enter into; suffice it to say that the bulk, when compared with what was professedly a bulk sample taken from the elevator, was as a rule considerably more deteriorated in quality than could have been induced by the generation of heat on the voyage."

Such frauds as are spoken of in the above extracts are a disgrace to our whole grain trade, and we sincerely hope the guilty parties may be properly punished. The greatest care should be taken to preserve the confidence of our foreign customers, and any who from motives of cupidity defraud them should be severely punished. We have too much at stake to have our grain trade injured by unprincipled dealers. Milwaukee has honestly won a fair reputation for square dealing in the grain markets of the world, and we hope no such charge will ever be laid at our door as that in the above extract to Baltimore."

THE RUSSIAN RAILWAY IN AFGHANISTAN.

The *Pall Mall Gazette* says: If different rumors, founded, it would seem, on a common basis, can be trusted, the oft-mentioned and much-discussed scheme of a railway to the Russian possessions in Tustan has once more been brought forward. A Reuter telegram from St. Petersburg and the St. Petersburg correspondent of the *Independence Belge*

agree in connecting with this scheme the mission of General Abramoff to Cabul, and both assert that the Russian Government seeks permission from Shere Ali to continue the line up to and beyond the limits of Afghanistan. Here, however, the two authorities part company; one maintaining that the railway intended to connect Russia with Afghanistan is to run from the Russian possessions in Turkestan to Cabul; the other that it is to start from the shores of the Caspian Sea and go to Herat. The Russian Government has resolved to build the long-projected railway through Turkestan, and General Abramoff is commissioned to obtain the permission of Shere Ali to "extend the line as far as Cabul." The project of a railway from Turkestan to Cabul is one which, as soon as the mountainous frontier of Afghanistan was reached, would present engineering difficulties of a very formidable character indeed. According to Reuter's agent at St. Petersburg, the Turkestan Railway is to go to Herat by the route which a Russian army approaching Herat would undoubtedly take. It is possible, of course, that the Russian Government may have conceived the grandiose plan of building more than one railway in Turkestan—or rather one railway with several branches. But if one line only is to be made it will probably, as Reuter's agent suggests, run from the Caspian Sea to Herat. There seems, in any case, to be seriously a question of a railway for bringing the Russians into Afghanistan.

THE FUTURE OF AMERICA.

The Rev. Joseph Cook at a recent lecture had for his theme the future of America. "Mr. Gladstone, who weighs all his syllables," he said, "has lately annoyed England by declaring that the census of 1880 will exhibit the United States as the wealthiest of all nations." Taking this as a central thought, the lecturer then compared the size of the United States with other countries. Physical size was opportunity, and opportunity applied is greatness, but at the same time is also temptation. With the size of our country come great political spoils and the temptations for greed and plunder. The men who rule under yon dome and Executive mansion govern a far greater and richer domain than was ever the Roman Empire, which was the object of Caesar's ambition. In explaining at length the greatness of our country, Mr. Cook said: "For geographical reasons I am glad I am an American; for geographical reasons I am afraid to be an American, and yet for geographical, political and social reasons I would rather be an American than a Roman under Caesar, or Briton under Victoria." Passing quickly on, the speaker reviewed the labor question and communism. The five great railroads were the fingers of a hand reaching over this broad land, the smaller lines the arteries, while the great cities lay at the tips of the fingers and made the wrist and arm. When unemployed labor became incited to riot, and the connection between the producer and the consumer was cut off by lawlessness and insurrection there would be pain. But with five great powers, the parlor, pulpit, politics, press and police, marching in Macedonian phalanx, America is safe. By our geographical position this continent is better favored than Europe, Asia or Africa. We have more weight of arable land. The time may not be far distant when this side of the globe contains the majority of the world's population. We have now only fourteen persons to the square mile; our ultimatum is eighty. We may look forward to the time when our population is twelve hundred millions. America is young yet; her feet are tender, though bedewed with blood, and as she wanders through the continents of time the lips of eternity kiss them out of pity for their infancy."

Mr. Cook dwelt at length upon the probability of a great English-speaking alliance encircling the globe, holding in itself the power of making universal peace. He acknowledged that our large cities at present were bad exemplars of good government, but claimed that this could be remedied by allowing none to vote that could not read and write, and by abolishing rotation in office. By decreasing political spoils temptation would be diminished. To bring ultimate happiness we must diffuse liberty, intelligence, property, when it is earned, and conscientiousness."

ADULTERATED GRAHAM FLOUR.—Graham flour is rapidly coming to be as much an article of suspicion as ground coffee or spices, or any other of the thousand and one adulterations that are daily practised. The commonest form in which Graham flour is seen is that made from a medium or poor class wheat, and while not properly adulteration, it may be justly characterized as swindling of the meanest kind, for the reason that the product is largely used by dyspeptics, and others in imperfect health. The miller who palms off on his customers Graham flour made from anything but the choicest of wheat, is one of the meanest of all villains, and, if he is not aware of it, should be told so. Graham flour, properly made, is nearly as costly an article as bolted flour ground from the same wheat, and, therefore, when you are offered Graham at much less than the best bolted flour, you are being victimized—it is either adulterated or it is made from inferior wheat. A common form of adulteration, and one that is practised by at least one retail flour dealer in this city, is to take a barrel of flour costing about five dollars, added to it about sixty pounds of bran, twenty-five pounds of middlings, and the same quantity of corn meal. The result of

the mixture is three hundred and sixty pounds of stuff costing about six dollars and forty-five cents, or a fraction over two cents a pound; while Graham flour, made from the best wheat, cannot be sold now at less than three and one-half to four cents a pound. And yet this vile stuff is being swallowed by people in search of better health, when they would do about as well on a diet of hot white biscuit.—*St. Louis Trade Journal*.

POPULATION OF SOME OF THE GREAT CITIES OF THE WORLD.—The Registrar-General of London, in one of his weekly reports, gives the population of the cities of the world having over a quarter of a million of inhabitants, as follows: First comes London, with its 3,577,304 people; next is Paris, with its 1,988,806; New York, with its 1,084,528, and its close neighbor or partner, Brooklyn, with 549,438; and then Berlin, with 1,019,620 inhabitants. Philadelphia has its 876,118; Vienna, 727,271; St. Petersburg, 669,741; Bombay, 644,405; Glasgow, 566,940; Liverpool, 532,581; Manchester, with Salford, 530,765. All these are above the half million. Then comes Naples, with its 457,407; Calcutta, with 429,535; Madras, 397,552; Hamburg (the State), 405,104; Birmingham, 383,117; Baltimore, 355,000; Buda-Pesth, 319,350; Dublin, 314,666; Leeds, 304,948; Rome, 282,214; and Breslau, with 267,000 population. He seems to omit the great Chinese and Japanese cities.

THE PROFITS OF MINING.—After all that has been said about the richness of ores in the Comstock lode, and the enormous wealth in that deposit, it is surprising to learn that the average yield of the ores has been only \$43 a ton. The "big strikes" of rich ore were all duly proclaimed, loud and long, for the purpose of selling the mining stocks, but the low yields of ore were passed by unnoticed, and this is the way in which the exaggerated idea of the richness of the lode was obtained. Some of the first ores did yield enormously, at times as high as \$4,000 a ton; but these cases were exceptional and rare. The whole quantity of ore from the twenty mines on the lode has been 6,324,210 tons, and the whole amount of bullion obtained from it \$271,874,842, being at the rate of \$42.95 per ton. At first view, \$271,000,000 in gold and silver looks like an enormous yield of money in ten years, but it is not half as much, after all, as the value of the California wheat crop in the same time. Besides, it has required a great expense to work the mines, so that the net profit of Comstock mining has not been nearly as large as might be supposed.—*St. Louis Republican*.

RUSSIAN RAILWAY.—Engineer John McFethries, for eleven years master mechanic of the Kursk, Charkoff and Azof Railroad in Russia, has returned to Springfield, Mass., and gives interesting facts about Russian railroading. This road is a single-track concern, 500 miles long, running from Kursk to the port of Taganrog on the Azof Sea. The gauge is five feet, with an equipment of 225 passenger and 4,500 freight cars, 200 engines and 4 locomotive and repair shops, with 1,500 to 2,000 employees, according to the season. The coaches, of continental manufacture, are peculiar in pattern, opening at the ends with a middle aisle as here, but only 34 feet long, and instead of having four or six-wheeled tracks, three single wheels on each side of the car, are attached directly to the car string-pieces, equi-distant, and not connecting with each other. Four wheels suffice for a freight car. American coaches are almost unknown, only one car, a Pullman, from England, having been run over the road on an exhibition trip. But palace cars are liked by the authorities, and Mr. McFethries thinks they will soon be in use, though the royal family may for a time monopolize them.

BRICK-MAKING BY STEAM.—There are two brick yards in the country, one at Washington and the other at Baltimore, with machinery for making bricks by steam, which is stated to be very rapid and economical in operation. Each of these establishments is said to have a capacity of 200,000 bricks per day. The clay, after it has been passed through iron rolls, which pulverize the small stones and reject the large ones, is carried to the top of the building and thence falls into the disintegrator, which makes 450 revolutions per minute. Here it is reduced to a fine powder and passes off into a pipe, where, by the addition of steam, it is moistened enough to give to its particles the proper cohesiveness. This pipe feeds a wheel furnished with molds, which, in the two revolutions it makes each minute, turn out 232 bricks. As the wheel revolves the bricks drop out on to an endless belt which carries them to a shed some 50 feet away, where they are loaded by hand upon small cars, which are rolled over into drying ovens and allowed to dry there during five hours, the dampness in these ovens being constantly withdrawn by an exhaust fan. After this they are stacked in kilns and fired.

WONDERS OF AMERICA.—The greatest cataract in the world is the Falls of Niagara, where the water from the great upper lakes forms a river of three-fourths of a mile in width, and then, being suddenly contracted, plunges over the rocks in two columns to the depth of 165 feet. The greatest cave in the world is the Mammoth Cave of Kentucky, where any one can make a voyage on the waters of a subterranean river and catch fish without eyes. The greatest river in the known world is

the Mississippi. It contains 5,000,000 square miles, and is one of the most fertile regions on the globe. The greatest city park in the world is in Philadelphia. It contains over 2,700 acres. The greatest grain port in the world is Chicago. The largest lake in the world is Lake Superior, which is truly an inland sea, being 430 miles long and 1,000 feet deep. The longest railroad at present is the Pacific Railroad, over 3,000 miles in length. The greatest mass of solid iron in the world is the Pilot Knob of Missouri. It is 350 feet high and two miles in circuit. The best specimen of Grecian architecture in the world is the Girard College for Orphans, Philadelphia. The largest aqueduct in the world is the Croton Aqueduct, in New York; its length is 40¼ miles, and it cost \$12,500,000. The largest deposit of anthracite coal in the world are in Pennsylvania, the mines of which supply the market with millions of tons annually and appear to be inexhaustible.

Seventy-three thousand bushels of wheat and 4,000 barrels of flour were shipped from Duluth, Minn., during the first week in November.

Sometimes the services of a civil engineer are cheap at twice the money. A Henderson county farmer worked four days, recently, digging a ditch to drain a bit of low meadow of his own into a big pond on another man's farm. And when the ditch was opened the pond just walked right into the meadow and located about twenty acres of swamp right where the hay used to grow, and the farmer was just the maddest man.

DEEPENING THE MISSISSIPPI.—Capt. John Cowden, of Memphis, an old Mississippi River navigator, was in attendance at the Commercial Convention, and has a scheme for the deepening of the Mississippi and the reclaiming of the swamps in its valley, and doing away with levees. He thinks that the surplus waters could be carried to the Gulf by a cut six miles long from the point just below New Orleans to Lake Borgne. This cut would only need to be a mile wide and twelve feet deep. In this distance a fall of twelve feet would be obtained. The Captain claims the same result would follow as in the opening of the Bonnet Carre Crevasse, by natural causes, in 1873, which was the discharge of one-twelfth of the water of the river into Lake Pontchartrain, the result of which has been a large diversion of sediment through this cut and the consequent deepening of the channel at the mouth of the river. A similar outlet below New Orleans would increase this good result. The Captain also advocates the turning of the surplus waters of Red River direct to the Gulf through the Bocufl and Calcasieu Rivers. By these and other outlets which he names, Capt. Cowden says, at a cost of not to exceed \$10,000,000 the channel of the river would be permanently deepened, while engineers estimate the cost of the construction of levees at \$46,000,000, and the expense of building and repairing would be perpetual.

NOTE ON "BLOWING OFF" STEAM BOILERS.

In a French essay on the care of steam boilers we find a note on the advantage of cooling off the arch after stopping and before "blowing off." It is as follows: Those who possess externally-fired boilers working only by day have all observed that the fire being covered at night, and the doors closed, the pressure rises during the night, often sufficiently to open the valves. This shows that the masonry, being at a much higher temperature than the boiler which it envelops, imparts to it some of its heat. The same effect of heating the boilers by the masonry is produced to a less degree, it is true, but, nevertheless to some extent on the outer jacket of internally-fired boilers. It is consequently injurious to empty boilers soon after having stopped them, because after emptying the plates would be heated by the action of the masonry. It is well to admit a current of air through the flue some hours after the stoppage of the generator, and not to empty it before the flues have become cooled to a temperature below 150 deg. When the flues are not too hot, no serious inconvenience is experienced in emptying the boiler under pressure. We do not say at high pressure, as for a boiler the pressure of which would be 5 kilograms, the temperature of the water being 152 deg., a great quantity of steam would be generated during the process of emptying; we think that at a pressure at one kilogram, the boiler could very well be emptied.

In internally-fired boilers, as there is no masonry to cool in the furnace tubes, it would be preferable to admit the current of air intended to cool the masonry behind the boiler, as in this case the furnaces would not be cooled more rapidly than the jacket. We have sometimes seen owners empty their boilers almost immediately after the fires have been extinguished, clean them with cold water as soon as they were empty, and keep up a current of water so that the workmen might work there. Boilers of small dimensions sometimes resist this treatment, but in large boilers it will be seen that unequal contractions must take place which burst the rivets.

EVERYBODY READS THIS.

NEWS OF THE WORLD.

Items Gathered from Correspondents,
Telegrams and Exchanges.CROP ITEMS—MILLING AND MANUFACTURING ITEMS
—FINANCIAL ITEMS—CASUALTIES—
ETC., ETC., ETC.

Wamego, Kan., is to have a \$16,000 flouring mill.

Marfield & Babcock, millers, of Niles, Mich., closed.

Nathan Barlow, of Hastings, Mich., has sold his flour mill.

Geo. S. Stewart's planing mill at Bradford, Pa., has burned.

G. Pfeiffer of Newton, Iowa, has patented a mill-stone feeder.

J. W. Chatburn's new mill at Shelby, Iowa, is nearly finished.

Brownlee, of Mondovi, Wis., is pushing the work on his new mill.

Geo. Bodemich's shingle mill at Big Rapids, Mich., burned.

The winter wheat prospect in Indiana is unusually favorable.

Barnes, the Winnebago City, Minn., cooper has fallen heir to \$18,000.

Mr. Hughes has just completed his new feed mill at Somers, Wis.

Garst & Tinsley, of Big Lick, Va., millers, have dissolved partnership.

Elliott & Pool, millers, of Jackson, Mich., have dissolved partnership.

The Ottumwa (Iowa) Oatmeal Mill uses 1,000 bushels of oats per day.

Kirk Geissinger, of Ackley, Iowa, has bought a mill at Hardin City, Iowa.

Geo. Eckler, of Dayton, W. T., has purchased the saw mill at that place.

S. C. Buck, owner of the saw and flour mills at Falmouth, Mich., is dead.

Mr. Dessert, of Mosinee, Wis. has made extensive improvements in his mill.

Hyndman & Enfield, of Dundas, Minn., have added a feed run to their mill.

The Alexandria, Minn., flour mills are now turning out excellent new process flour.

John T. Milton has bought the grist mill of N. H. & B. Bean at East Canaan, N. H.

The Manchester paper mill, at Manchester Bridge, N. Y., burned. Loss, \$75,000.

Geo. Pratt, miller, at Mount Union, N. Y., is succeeded in business by Pratt & Morse.

The Morristown (Minn.) Mill has a large stock of wheat on hand and is running on full time.

Messrs. Coman & Morrison have started the feed run in their new flouring mill at Fox Lake, Wis.

Edw. P. Allis & Co. have closed a contract for one of their improved Corliss engines to go to Chicago.

Wm. Shacklett & Co., proprietors of the Pearl Mills, at Columbia, Tenn., have made an assignment.

The Phoenix elevator at Peoria, Ill., burned by incendiary November 3d, with 100,000 bushels of wheat.

Matt Hochstein, who was badly injured in Manegold & Co.'s mills, in Milwaukee, is able to be out again.

Both B. D. Sprague's and Valentine & Tew's mills at Rushford, Minn., are running day and night.

C. Van Orman and J. N. Hagenbaugh, of Athens, Mich., have taken out a patent on a grain separator.

Mr. Buttner's new grist mill at Carolina, Shawano county, Wis., is completed and is turning out good flour.

I. V. Ganze, of Richmond, Ind., has just put in a purifier, etc., furnished by the Richmond City Mill Works.

Hulbert & Paige, Painesville, Ohio, are shipping large numbers of their small engines and machinery for elevators.

Mr. S. M. Newton's mill at Independence, Wis., with Mr. Levi Heart for head miller, is running day and night.

The Reliance Mills, Milwaukee, are putting in a 28x48 improved Corliss cylinder, built by Edward P. Allis & Co.

Detwiler & Welch, owners of the Market street flour mills, Philadelphia, have failed. Liabilities about \$100,000.

David Narracong, of Pardeeville, Wis., has gone to Delton, same State, to run the Delton Queen Mills on shares.

One firm in Baltimore, Md., recently ordered

1,000 barrels of flour from B. D. Sprague's mill at Rushford, Minn.

A new saw and grist mill is to be erected at Vestaberg, Mich., by Mr. Donnell, of the late firm of Donnell & Purdy.

A. & O. Prickett, of Oakland Co., Mich., have added a new corn run, furnished by the Richmond City Mill Works, of Richmond, Ind.

A. H. Day & Co., of Columbus Grove, Ohio, have added a middlings run, furnished by the Richmond City Mill Works, of Richmond, Ind.

Edward P. Allis & Co. have contracted for a complete roller mill, no stone being used, the Wegmann roller machines supplying their place.

The Richmond City Mill Works last week shipped the machinery for a three-run new process mill to be located near Mineola, Texas.

The Minnetonka Mill Co. report that the 16 x 42 Corliss engine they bought of Edw. P. Allis & Co. exceeds their most sanguine expectations.

The Milwaukee Milling Co. are now erecting the 20 x 48 improved Corliss engine, with 18 foot band wheel, they purchased of E. P. Allis & Co.

Edw. P. Allis & Co. have closed a contract with Mr. Frank Clark, of Hamilton, Mo., for a complete four-run mill and improved Corliss engine.

The Richmond City Mill Works, of Richmond, Ind., have just furnished Smith Waite, of Medina Co., Ohio, an additional run of burrs for corn.

A. C. Braun, of Palmersville, has put in a 42-inch run old quarry burrs for wheat, built by the Richmond City Mill Works, of Richmond, Ind.

Hulbert & Paige, Painesville, Ohio, are overcrowded with orders from all parts of the country for their celebrated Triumph Power Corn Sheller.

The Florence Mills, at Stillwater, Minn., have contracted for two cars a day on the St. Paul, Stillwater and Taylor's Falls road, to ship their flour East.

Skinner & Crosby, Windsor, Ohio, have been putting in new machinery in their custom mill. Hulbert & Paige, Painesville, Ohio, furnishing the same.

Wm. Cook, of Havard, Neb., recently ordered a mill outfit of Nordyke & Marmon Co. He has also ordered an engine outfit of the above firm to drive the mill.

John Lee, of Sac City, Iowa, is making an extensive addition to his mill, the machinery for same is being made by Nordyke & Marmon Co., of Indianapolis, Ind.

R. M. Dye, of New Belleville, Ind., is engaged in building a complete custom mill, which is being furnished by the Nordyke & Marmon Co., of Indianapolis, Ind.

M. Moak, of Lawrence, Kan., is adding burrs and fixtures to drive, to his mill, all of which is being furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

Hulbert & Paige, Painesville, Ohio, are building and furnishing the complete outfit for a first-class twelve-run mill for Mankato, Minn. H. & F. L. Walters, millwrights.

John Blinn, of Sheldon, Minn., is engaged in refitting his mill and is putting in new machinery, which has been purchased of Nordyke & Marmon Co., of Indianapolis, Ind.

Blue Springs, Mo., is to have a new four-run mill which will be first-class in every respect. The Richmond City Mill Works furnish the machinery complete, including power.

Jake Henry, of Sharpsburg, Ky. (near Cincinnati), has ordered of the Nordyke & Marmon Co., of Indianapolis, Ind., a water mill, for custom work, with the late improvements.

McKeen Bros., of Terre Haute, Ind., are adding burrs and additional machinery to their merchant mill, and the millwrights of Nordyke & Marmon Co. are putting up the work.

Thornburg & Small, of Martinsville, Ind., are engaged in thoroughly overhauling their mill, and the work is being furnished by the Nordyke & Marmon Co., of Indianapolis, Ind.

E. Done, of Pike Co., Ill., is overhauling his mill and putting in considerable additional machinery, including a middlings run. The Richmond City Mill Works have the contract.

Godfrey Pfeiffer, of Newton, Iowa, has purchased of the Nordyke & Marmon Co., of Indianapolis, Ind., machinery for a two-run new process mill, with all the late improvements.

A cargo of flour has recently been received at St. Louis by the steamer Nellie Peck from Fort Benton on the Missouri River. This is the first exportation of food ever made from that point.

The wheat crop of Pennsylvania for this year has been estimated at about 18,750,000 bushels. This is the best crop obtained since 1871, and averages a yield of about 15½ bushels to the acre.

Edw. P. Allis & Co. are making a shipment of three iron frame portable mills, three circular saw mills and two engines, consigned to parties in Oregon, which are to go around by steamer.

Edward P. Allis & Co. have orders for eight of

their improved Corliss engines. These engines are gaining great favor from millers, and are considered the best and most economical made.

Nordyke & Marmon Co., the extensive mill furnishers of Indianapolis, Ind., have been awarded the contract for an extensive steam flour mill, to be built at Parsons, Kan., by Wm. Hoke, Esq.

Fears are entertained that most of the water mills in this section will be compelled to lie idle the greater part of the winter for lack of water to turn their wheels.—*Sauk Center (Minn.) Herald.*

Mr. S. M. Newton, of Chippewa Falls, Wis., is interested in Mr. Brownlee's new mill at Mondovi, Wis., which is being rebuilt to replace the one which Mr. Brownlee lost by flood last summer.

Mr. J. D. Green, of Faribault, Minn., has contracted for a 16 x 42 improved Corliss engine and steel boilers with E. P. Allis & Co., of Milwaukee. This is the second Corliss engine he has bought of this firm.

Edw. P. Allis & Co. have now in operation a number of their improved noiseless belt porcelain and iron roller mills. These are a great improvement, being capable of much higher speed and increased capacity.

The mill of M. M. Taylor, of Mount Pleasant, Iowa, is undergoing a thorough overhauling, and is being fitted up with new process machinery, all of which is being furnished by the Nordyke & Marmon Co., of Indianapolis, Ind.

Edward P. Allis & Co. report that several large mills are now using the Wegmann patent porcelain rolls on middlings, to the exclusion of stone, with the greatest success, and that they are far behind their orders for these machines.

The Austin (Minn.) Register says: The mill property and residence of Mr. M. Gregson, at Ramsay, is pleasantly situated. Since the new iron bridge across the Cedar river has been built there, it is more attractive than ever.

It seems that in Canada, also, the yield of wheat this year is greater than usual. One Canadian agricultural paper places the increase at 50 per cent, and says that flour will be cheap, and that the Dominion will have some wheat for export.

Mr. Ashley, formerly of the Markesan Mills, will take charge of Coman & Morrison's Fox Lake flouring mills. Mr. E. Newman had been engaged to take charge of the mills, but owing to some other engagements was unable to do so. The mill is in splendid shape and will no doubt turn out excellent work.

The contract for the building of the Morrison & White twenty-five run flouring mill, including the excavation for the foundation and canal, is in the hands of O. A. Pray & Co., the enterprising mill builders. It's a big job, but if any body can carry it through they can. The structure is to be of Chaska brick.

Eastern millers are taking Horace Greeley's advice to "go West." The Richmond City Mill Works, of Richmond, Ind., have received half a dozen orders from Connecticut and Rhode Island during the past ten days or two weeks, and are shipping many portable mills, etc., to New York and Pennsylvania.

Jacob Phleger, of Dewitt, Mo., has purchased of Nordyke & Marmon Co., of Indianapolis, Ind., a first-class 3-run new process mill and engine. It is intended to make this mill one of the best in Missouri, and with the reputation of the mill furnishers, and the energy of Mr. Phleger, there is no doubt but that the mill will be a great success.

The grain elevator at Claremont, Minn., owned by George W. Van Dusen & Co., and occupied by the same firm and John Edmonds, was totally destroyed by fire November 25th, together with its contents, about 12,000 bushels of wheat. The elevator and wheat, which was owned by Van Dusen & Co., were fully insured, but Edmonds' insurance had expired only three days previous to the fire. The total loss is probably \$20,000.

Chicago is making certain progress in the business of her export trade. Our principal and largest exports are very naturally more noticeable in the foreign movement of flour, grain and provisions. Since January 1st, 1878, we have exported direct 114,274 barrels of flour, 5,282,412 bushels of wheat, 3,583,187 bushels of corn, and 124,595 bushels of oats. Of cured meats we have sent out 410,628 boxes. Lard has gone abroad to the extent of 191,070 tierces, and beef amounting to 11,243 barrels and tierces. Butter and cheese to extent of 195,228 packages have been shipped abroad, and 110,422 cases of canned meats; for the extent of manufacture and excellence of which goods Chicago takes the lead.—*Chicago Journal of Commerce.*

A letter to the Leavenworth Appeal from Cawker City, Kan., in speaking of the flour mill at that place, says: "One mile below the forks of the Solomon are the Junction Mills, the last on the river that have the benefit of the water from both forks, has the best water power in the county or on the river. This mill was built by T. F. Hersey, who came to Kansas from Illinois twenty-two years ago. He has lived nine years in this county, and built the first mill and constructed the first water power in the county, the foundation being solid rock. The mill has three run of stone and is now

grinding about 500 bushels per day, besides sawing 2,000 feet of lumber, and has power enough to spare to run a woolen or paper mill. In fact it is the most substantial improvement on the river, and Mr. Hersey, the fortunate owner, deserves to succeed with it. He is noted for his strict attention to business, his adherence to principles, and his fine sense of honor and integrity."

S. S. Kennedy & Co., of Greeley, Col., are enlarging their mill and improving their water power; the latter by a new Houston turbine, and the purchase of the balance of the water power to their canal, which was originally intended for two mills. They are adding one new run of stone, four new Garden City purifiers, dusting reels, and changing their mill generally with a view of adopting the new process, which Mr. Kennedy thinks will be a success in Colorado. They are among the first to adopt smooth surfaces and slow grinding in Colorado, and old-timers are looking on with one eye shut, wondering what will come next. Of the emery wheel mill stone dresser Mr. Kennedy and his head miller think it a great help in stone dressing, and the smooth, true surface it gives to face and furrow indispensable to good milling, and accordingly they gave our agent an order to be filled immediately. May the reputation of the Greeley "Snow Flake" ever keep in the lead of all brands of flour in the State, a place it has held ever since its manufacture was commenced.—*Northwestern Miller.*

FIRES AND CASUALTIES.

The flour mill at Gowrie, Iowa, burned on November 6th.

Park & Mears' barrel factory at Wheeling, W. Va., burned Nov. 8th. Loss, \$10,000.

Berger & Engels' brewery, in Philadelphia, burned Nov. 10th. Damages, \$50,000. Insured fully.

Jenkins & Bensing's flour mill, at Rochester, N. Y., known as the Pearl Flouring Mill, burnt Nov. 6th. Loss, \$30,000.

MEMPHIS, TENN., Nov. 14.—Fire last night destroyed L. P. Judd's grist mill, cotton gin, and twenty bales of cotton, at Raleigh, Tenn. The loss is \$7,000; no insurance.

RUSHVILLE, IND., Nov. 14.—A valuable saw-mill owned by Miller Robinson, in the southern part of this county, was destroyed by fire last night. Loss, \$32,000; no insurance; incendiary.

PLANO, ILL., Nov. 17.—A conflagration occurred at Bristol Friday night, which resulted in the total destruction of McLain's mill, which had very recently been reconstructed and put in working order.

JOSH BILLINGS.

Witty Sayings Culled from His Farmer's Almanac.

I hav finally cum to the konklushun that if I kant prove a thing without betting \$3 on it, the thing haz got a dredphull weak spot somewhere.

Q.—What is the best religious creed to hav?
A.—Charity. If a man will swop off all the religious creed he has got on hand, and invest the proceeds in charity, he will alwas be proud ov the job.

Q.—Will yu pleze define an Enthusiast?
A.—An Enthusiast iz a party who believes about four times az mutch az he kan prove, and kan prove about four times az mutch az ennyboddly else beleaves.

Allmost enny phool kan prove that the Bible aint true; it takes a wize man to beleave it. It iz a wize man who profits bi hiz own experience—but it iz a good deal wizer one who lets the rattlesnaik bite the other phellow.

Yung man, set down, and keep still; yu will hav plenty ov chances yet to make a phool ov yureself before yu die.

Take all the phools out of this world, and thare wouldn't be enny phun nor profit living in it.

I would az soon think ov pulling the feath-ers out ov a peacock's tale az to interfere with inosent vanity of a man.

Married life iz a little game, in which the woman, if she iz called, iz allmost sure to have a strate flush.

The man who knows a thing, and can tell it in the fewest words, iz the hardest kind of a man to beat in a kross examinashun.

The things that i kant prove i beleave the most; i beleave that one apple iz sour and another sweet, but i will give enny highly eddikated man a span ov matched mules who will tell me what makes them so.

The smartest thing about enny man iz hiz conscience; he may outargy hiz reason or stultify hiz faith, but he kant beat hiz conscience.

The best thing i kno ov iz a fust rate wife, and the next best thing is a second rate one. Thare aint nothing that a man will thrive so well on az abuse that aint merited.

AUSTRIAN MILLERS.

As has been officially announced, the Society of Austrian Millers has been awarded one of the largest prizes at the Universal Exhibition at Paris. The Austrian millers naturally regard this as an event of no little importance, not, as the *Oesterreichische Ungarische Mueller Zeitung* observes, because it flatters their vanity, but because they regard the Paris Exhibition as marking a new epoch in Austrian milling industry in the event of their exhibition being crowned with success. The largest prize, as is known, is the *grand prix*, the number of which was fixed at 100. The French jurors, however, fearing that an insufficient number would fall to the lot of French exhibitors, proposed that the number should be increased to 150. To this the Government did not agree, instead of which 50 *diplomes d'honneur* were created, and these were to constitute the second rank of distinction. The order of rank is consequently as follows: 1, grand prix; 2, *diplome d'honneur*; 3, gold medal; 4, silver medal; 5, bronze medal; and 6, honorable mention. Of the 50 *diplomes d'honneur* 12 have been awarded to Austria, of which the Society of Austrian Millers have received one. The French milling industry has likewise been awarded one. With pardonable pride, a writer in the above-named journal remarks: "We have now shown the world what the Austrian milling industry is capable of, and although the jealousy of French milling industry disputed the *grand prix* with us, the jurors could do no other than award us the prize which was of equal value. Now that the most competent departmental men in the world have expressed their opinion, nobody will deny the rank which the Austrian milling industry occupies in the commerce of the world and will always occupy whenever the chance is offered it. . . . He who lags behind must find himself mercilessly crushed beneath the wheels of time, whilst he who joins the party of progress will participate in the success. Already, in consequence of the Paris Exhibition, extensive relations have been entered into with our mills, and the prospect of a large export trade is opened out before us. It is in the power of the Austrian millers themselves thereby to do away with the consequences of over production. They must assist the Society of Austrian Millers to bring about the introduction of an uniform type of flour, and, by joining the Society, assist in furnishing the means of making new markets accessible to its members."—*London Miller*.

PROFITS AT THE PARIS EXHIBITION.

The *Rappel* of Paris undertakes to estimate the value to the capital of the world's fair of France now being held there. It says that the receipts for admissions, from the opening in May up to September 18th, were 8,665,054 francs, the rush in September being so large as to promise to swell the total to 10,000,000 francs. The *Rappel* estimates that the total receipts by the end of October will be 13,000,000 francs. Thereto are to be added the following sums in francs:

Alienation of materials from Champ de Mars.....	7,000,000
Contribution by the city of Paris.....	6,000,000
Repurchase of the Palace of the Trocadero by the city of Paris.....	3,000,000
Tax on the cafes and restaurants in the park.....	4,000,000
Receipts from the Trocadero concerts.....	1,000,000
Total.....	21,000,000

This would make the total receipts of the Exhibition 34,000,000 francs. The total cost is fixed at 45,300,000. The balance sheet of the Exhibition therefore will show a deficit of 11,300,000 francs. But against this is to be set the fact that the revenue from indirect taxes has increased already 51,000,000 francs, and will in the course of the year increase 70,000,000, principally in consequence of the world's fair, whereas the increase was estimated in the budget at only 10,000,000 francs. This would leave about 60,000,000 francs to the credit of the Exhibition, to say nothing of the advantages which trade and commerce have derived from the fair.

DECISION REGARDING OPTIONS.

Judge McAlister, of Chicago, has rendered a decision in the case of Tenney et al. vs. Foote, a case of interest to operators and speculators in grain. This suit was brought to recover against Foote as guarantor of a note for \$5,000 and interest, made by the trustees of the Couch estate payable to Foote and by him transferred to S. G. Hooker & Co., and by them to plaintiffs. The defense was that the consideration for the guarantee by defendant was an account of S. G. Hooker & Co. against Foote which arose out of an unlawful contract made by them, whereby Hooker & Co., as commission men, should deal on the

Board of Trade for Foote in options and settling upon differences, contrary to the statute against gambling. The Court held that if the real intention of the parties be that there is to be no sale of the article—no delivery or acceptance of it—but the transaction to be adjusted only upon differences, it is a gambling transaction within the statute. In the case at bar the intention of the parties that there should be no real purchase or sale or delivery or reception of any commodity is manifest by the terms of the contract.

It was immaterial whether the plaintiffs be bona fide holders of the note or not, if the contract between Hooker & Co. and Foote was a gambling transaction and within the statute against gambling, because the statute itself renders void all contracts, notes, bills, or other securities where the whole or any part of the consideration arises out of a gambling transaction. "Perceiving," the Court said, in conclusion, "no reason why this species of gambling, though wearing the more respectable aspect of business, should be looked upon with any less disfavor by the Courts than any other species, I am constrained by the facts of the case to sustain the defense."

KANSAS CITY AS A WHEAT MARKET.

The past season has settled beyond a doubt that Kansas City is destined to be one of the first grain markets in the West. With the immense grain country west of us and its rapid settling up by immigrants has convinced the most skeptical that our grain interest must grow each year. Yet its rapid advancement this season has been a surprise even to those directly connected with it. From July 1st to November 1st, the first quarter of the wheat year, our receipts were 5,563,591 bushels, against 1,185,432 bushels same period in 1877, an increase of 4,378,159 bushels, or 369 per cent. The shipments for the same time were 5,277,887 bushels, against 903,737 bushels corresponding months last year—increase, 4,374,150 bushels, or 493 per cent. The receipts by the Kansas Pacific and Atchison, Topeka & Santa Fe railroads from January 1st to November 1st, have been 8,122,470 bushels, or nearly as large as the total receipts in Kansas City for 1877, which were 8,855,160 bushels. If now, with Kansas but partly and thinly settled our receipts are at the rate of 20,000,000 bushels per annum, what may we expect when it becomes a well populated State? The future of Kansas City as a grain center is one of unexampled brightness, and we can see nothing short of a pestilence to check its onward progress.

Receipts and shipments of wheat at Kansas City for the first four months of the wheat year as taken from the books of the Board of Trade, and comparisons for 1877:

RECEIPTS.			
	1878.	1877.	1878.
	bus.	bus.	bus.
July.....	609,594	118,487	Inc. 491,107
August.....	1,840,724	347,210	" 1,493,514
September.....	1,415,765	315,705	" 1,100,060
October.....	1,957,510	404,030	" 1,553,480
Total.....	5,563,591	1,185,432	4,378,159
SHIPMENTS.			
	1878.	1877.	1878.
	bus.	bus.	bus.
July.....	620,298	87,990	Inc. 532,308
August.....	1,731,411	295,118	" 1,436,293
September.....	1,417,141	276,525	" 1,140,616
October.....	1,505,767	334,104	" 1,171,663
Total.....	5,277,887	903,737	4,374,150

—*Kansas City Price Current*.

SHIPPING A STEAMBOAT TO SOUTH AMERICA.

A complete steamboat was shipped from Pittsburg, Pa., on the 19th of October last, by way of New York, to be delivered to the United States of Colombia, South America. It was shipped in sections, and will be put together when it reaches its destination by men who will be sent from Pittsburg for that purpose. The hull is 150 feet long, 29 feet 9 inches beam, 4 feet depth, 28 inches shear, and made of homogeneous and tensile strength of 70,000. The machinery consists of 15-inch cylinders, 5-foot stroke, two patent cut-off boilers, 45 inches in diameter, 16 feet long, with forty-one 3½-inch tubes each, which were tested before leaving to 245 pounds. The boilers are also of homogeneous steel. The cabin was made something after the style of our Western river boats. The hull is all steel except the bulkheads and angle-irons; the cylinder "timbers" also being steel. The wheel is of iron. The cabin-stanchions are fastened to the hull and stern bulkhead. The name of the steamboat is the "Francisco Montaya," and she is designed to run on the Magdalena River. Should any individual or transportation company of Mexico require a steamer for the navigation of any river of that country, they can have her constructed and shipped in sections, in the same way, and put together where needed. Steamboats of great

strength can be built in this way, at the foundries and machine shops much cheaper and stronger than on the bank of the river to be navigated, where all the machinery for construction has to be shipped from a distance, and put up for that special purpose.

THE SUPPLY OF BREADSTUFFS.

The New York *Produce Exchange Weekly* says: The exports of grain from South Russian ports continue on a limited scale, although the railway companies have made large reductions in the cost of transportation from the interior; but from Russian Baltic ports considerable quantities of grain have been sent to Holland, Belgium and Germany, more especially of rye.

Prof. Newman Spallart, who has since 1870 annually published the statistics of the trade of the German Empire, gives the following for the three years, 1875, 1876 and 1877, from which it appears that that Empire is the largest importer of grain after Great Britain and France. On the other hand, Germany is also an exporter of grain, but the exports are less than the imports:

IMPORTS.			
	1875.	1876.	1877.
	Flour, equal brls.....	2,133,731	2,053,877
	Wheat, equal bus.....	25,448,433	35,189,090
	Maize, ".....	7,188,511	7,188,511
	Oats, ".....	22,504,144	25,039,433
	Barley, ".....	23,219,490	23,219,490
	Rye, ".....	43,842,014	47,139,072
	Other grains, ".....	554,824	575,049
Total grain, bus.....	79,144,512	112,853,179	138,350,705
EXPORTS.			
	1875.	1876.	1877.
	Flour, equal brls.....	1,450,986	1,819,357
	Wheat, equal bus.....	14,356,413	26,351,692
	Maize, ".....	763,756	808,061
	Oats, ".....	6,048,247	10,251,380
	Barley, ".....	3,858,050	8,428,005
	Rye, ".....	3,936,785	6,899,897
	Other grains, ".....	688,937	1,234,576
Total bus.....	42,860,503	30,152,168	53,874,622

The exports of wheat from South Australia from Jan. 1 to Sept. 7, 1878, have been 2,527,800 bus and 48,208 tons of flour, equal to 1,229,795 bus of wheat, or an aggregate of 3,757,595 bus wheat. There were on the 7th of September about 30,000 tons of surplus wheat available for export from the remaining reserves.

A GOOD LETTER FROM A LIVE PENNSYLVANIA MILLING FIRM.

To the Editors:

We are still doing satisfactory work down here in our little mill, even doing better work than when we last wrote you. Our flour will stand second to none and at the same time we have a fine yield. From 25 bushels (1,500 pounds) clean wheat we have 287½ pounds feed, 387 pounds "Patent," 741 pounds family, and 72 pounds low grade or extra and 12½ pounds loss in milling, averaging 4 4-60 bushels to make a barrel of flour including all grades. We send you samples of 1st and 2d bran just as it comes from the reels (we have no bran duster or we might get a little more out of the feed); we grind with smooth face and furrows, the same as when we wrote you last. Our flour has such a good reputation that it has brought us visitors (brother millers) from Chester, Delaware, Philadelphia and Montgomery counties to see how we do such good work. They can see the wheat we use and the flour we produce and some of them conclude it must be the "Garden City Purifier" and have since taken out some other machine and substituted the G. C. machine; but it is not the purifier alone that does the work, it is the miller who understands his business. Pennsylvania harvested a larger crop of wheat this year than it ever before produced. We have a list of some of the best yields. One farmer raised 12½ bushels from two acres of ground, others have 55 bushels, and plenty have 50 bushels per acre of the Fultz variety. The fall sowing is looking very fine and prospects are good for the coming harvest.

Yours respectfully,

WM. PYLE & SONS.

Harriton Mills, Bryn Mawr, Pa., Nov. 2.—*N. W. Miller*.

In New Mexico the colors of the grain of corn are numerous—blue, yellow, white, and even jet black. Blue seems to be the predominant color and is esteemed by the natives as the richest of all, being almost universally used by them in making the tortilla or corn cake. This is the only shape in which they prepare Indian corn for the table.

OUR ENORMOUS GRAIN TRADE.—The exports of grain from the United States during the harvest year ending September 1st, 1878, were the largest on record, notwithstanding the short crop on the Pacific Coast. The total amount sent abroad aggregated 117,638,806 bushels of wheat and flour combined, 85,373,885 bushels of Indian corn, and 4,098,035 bushels of rye. The total is 207,381,626 bush-

els, equal to 6,089,624 short tons. This vast amount of grain would load a fleet of 4,065 ships, averaging one thousand tons burthen each. The indications are that the present season even at these large figures will be exceeded, inasmuch as there is an enormous surplus east of the Rocky Mountains, and our State is marketing the largest crop ever harvested, while Oregon will not fall behind last season.—*San Francisco paper*.

The boiler blew up in Joseph Ent's mill at Savannah, Mo., Nov. 6th, killing two men and badly wounding two others.

St. Louis has twenty-six flouring mills with a capacity of 12,000 barrels a day. For the past six months the receipts of wheat have been 4,832,693 bushels, against 2,610,811 in the same time last year. When the Council Bluffs and St. Louis Short Line road is completed and direct connection is had with the market which has thus doubled in receipts in a single year, the same cause which brought about this condition of things will operate to increase the prosperity of Western Iowa also.—*Iowa Ec.*

OLD ENGLISH LAW AGAINST BEGGARS.—For an able-bodied man to be caught a third time begging was held a crime deserving death, and the sentence was intended on fit occasions to be executed. The poor man's advantages were not purchased without drawbacks. He might not change his master at his will, or wander from place to place. He might not keep his children at home unless he could answer for their time. If out of employment, preferring to be idle, he might be demanded for work by any master of the "craft" to which he belonged and compelled to work whether he would or no. If caught begging once, being neither aged or infirm, he was whipped at the cart's tail. If caught a second time, his ear was slit, or bored through with a hot iron. If caught a third time, being thereby proved to be of no use upon this earth, but to live upon it to his own hurt and that of others, he suffered death as a felon. So the law of England remained for sixty years. First drawn by Henry, it continued unrepented through the reigns of Edward and Mary, subsisting, therefore, with the deliberate approval of both the great parties between whom the country was divided. Reconsidered under Elizabeth, the same law was again formally passed, and it was therefore the expressed conviction of the English nation that it was better for a man not to live at all than to live a profitless and worthless life. The vagabond was a sore spot upon the commonwealth, to be healed by wholesome discipline, if the gangrene was not incurable; to be cut away with the knife, if the milder treatment of the cart-whip failed to be of profit.

Special Business Notices.

Do you need a good Saw Gummer or Saw Tooth Swage? If so write to J. W. Mixer & Co., Templeton Mass. Agents wanted.

NOTICE.—Owing to the death of Mr. Edward Harrison, we take this method of informing you that the business will be continued until further notice, and that all orders will receive prompt attention. Letters should be directed to the "Estate of Edward Harrison," New Haven, Ct.

THE MASONIC BOOK AGENCY.—We have received several inquiries concerning the Masonic Book Agency. Their place of business is on the southwest corner of Broadway and Warren streets, over Devlin's store, New York. They are all right, and we have no hesitation in recommending the company and their books to our readers.—*New York Weekly Sun, Sept. 4th*.

IMPORTANT TO MILLERS.—The necessity of the most positive uniform speed in the motive power of flouring mills is generally conceded. The unprecedented results in way of positive regulation of engine, durability and great economy in use, now guaranteed by the Hutton Governor Company, are worthy the consideration of all who may use steam power. See advertisement.

IMPORTANT NOTICE TO MILLERS.—The Richmond Mill Works and Richmond Mill Furnishing Works are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore, to save delay or misarrangement, all letters intended for this concern should be addressed with care to Nordyke & Marmon Co., Indianapolis, Ind.

THE MILLER'S TEXT BOOK.—By James McLean, of Glasgow, Scotland.—A descriptive and explanatory account of the various grains, machinery, and processes used in grain mills. The first clear and successful explanation of said processes ever printed. It treats on and explains all the newest and most improved modes of manufacturing wheat, oats, barley and peas, introducing the three latter mainly with the views of illustrating the principles at work in the proper manufacture of the first. Such as the various modes of storing, cleaning and grinding wheat, and the effects on their proper working with the Baker, showing conditions which must be observed to make flour equal to Hungarian. The effects of the different styles of working mill-stones, rollers and disintegrators contrasted. Also the different modes of separation, including gold sifting, the revolving crank sifter, the shaker, the wire cylinder, the silk reel, the best mode of working the silk reel. Vertical and horizontal air currents, the effects of air currents contrasted with sifting. Altogether explaining clearly well defined principles which govern proper grinding and dressing, where too often all is doubt and uncertainty. And although extensively circulated in Britain the last 12 months, none has yet ventured in print, to controvert its solution of the most difficult problems in the milling business. And being the production of a miller who has been over much of the United States, it can be easily understood by American millers. Price sixty cents, sent post paid. Address all orders to E. Harrison Cawker, Editor of THE UNITED STATES MILLER, No. 62 Grand Opera House, Milwaukee, Wis., who is sole agent for America.

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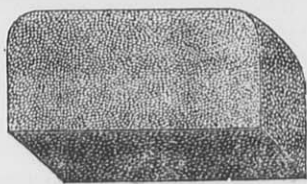
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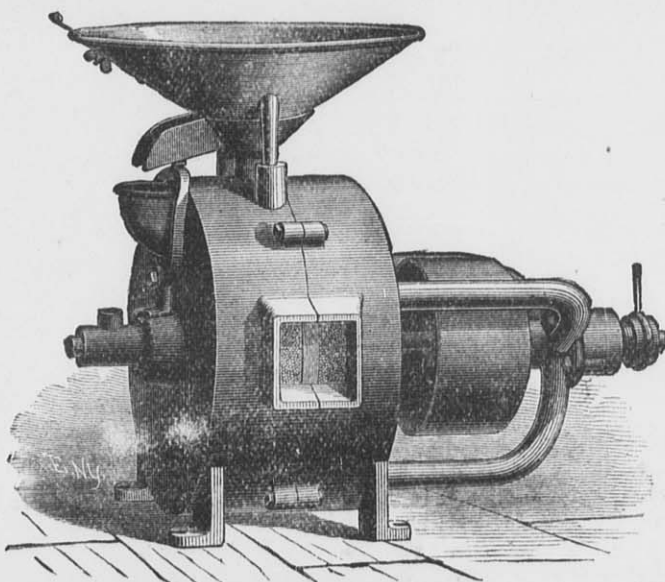
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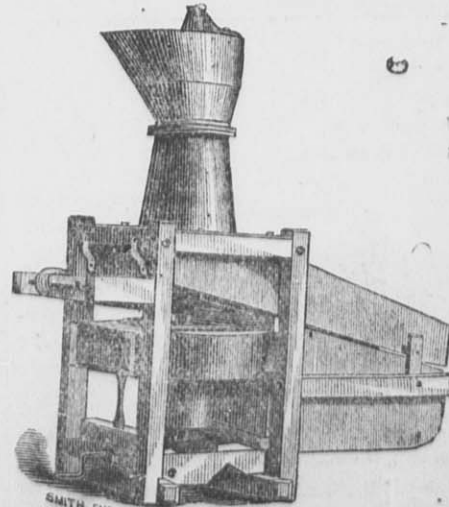
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THE CHARITY OF EXTRAVAGANCE AND LABOR-SAVING MACHINES.

BY ROBT. G. INGERSOLL.

Whenever the laboring men are out of employment they begin to hate the rich. They feel that the dwellers in palaces, the riders in carriages, the wearers of broadcloth, silk, and velvet have in some way been robbing them. As a matter of fact, the palace builders are the friends of labor. The best form of charity is extravagance. When you give a man money, when you toss him a dollar, although you get nothing, the man loses his manhood. To help others help themselves is the only real charity. There is no use in boosting a man who is not climbing. Whenever I see a splendid home, a palace, a magnificent block, I think of the thousands who were fed—of the women and children clothed, of the firesides made happy.

A rich man living up to his privileges, having the best house, the best furniture, the best horses, the finest grounds, the most beautiful flowers, the best clothes, the best food, the best pictures, and all the books that he can afford, is a perpetual blessing.

The prodigality of the rich is the providence of the poor.

The extravagance of wealth makes it possible for the poor to save.

The rich man who lives according to his means, who is extravagant in the best and highest sense, is not the enemy of labor. The miser, who lives in a hovel, wears rags, and hoards his gold, is a perpetual curse. He is like one who dams a river at its source.

The moment hard times come the cry of economy is raised. The press, the platform, and the pulpit unite in recommending economy to the rich. In consequence of this cry, the man of wealth discharges servants, sells horses, allows his carriage to become a hen-roost, and after taking employment and food from as many as he can, congratulates himself that he has done his part towards restoring prosperity to the country.

In that country where the poor are extravagant and the rich economical will be found pauperism and crime; but where the poor are economical and the rich are extravagant, that country is filled with prosperity.

The man who wants others to work to such an extent that their lives are burdens is utterly heartless. The toil of the world should continually decrease. Of what use are your inventions if no burdens are lifted from industry—no additional comforts find their way to the home of labor; why should labor fill the world with wealth and live in want?

Every labor-saving machine should help the whole world. Every one should tend to shorten the hours of labor.

Reasonable labor is a source of joy. To work for wife and child, to toil for those you love, is happiness; provided you can make them happy. But to work like a slave, to see your wife and children in rags, to sit at a table where food is coarse and scarce, to rise at four in the morning, to work all day and throw your tired bones upon a miserable bed at night, to live without leisure, without rest, without making those you love comfortable and happy—this is not living—it is dying—a slow, lingering crucifixion.

The hours of labor should be shortened. With the vast and wonderful improvements of the nineteenth century there should be not only the necessities of life for those who toil, but comforts and luxuries as well.

What is a reasonable price for labor? I answer: Such a price as will enable the man to live; to have the comforts of life; to lay by a little something for his declining years, so that he can have his own home, his own fire-side; so that he can preserve the feeling of man.

Every man ought to be willing to pay for what he gets. He ought to desire to give full value received. The man who wants two dollars' worth of work for one is not an honest man.

EXPORTS.—During the seven weeks from Sept. 9th to Oct. 26th the United States exported gold and silver bullion to the value of \$804,788, and imported during the same time \$2,965,576, showing a balance in our favor of \$2,160,788. Our exports of breadstuffs for the eight months ending Aug. 31, 1878, were as follows:

	Value.	
Barley, bush.....	1,597,526	\$1,024,128
Bread and biscuit, lbs.....	10,563,39	495,702
Indian corn, bush.....	66,203,756	34,716,879
Indian corn-meal, bbls.....	314,363	903,532
Oats, bush.....	4,305,629	1,414,044
Rye, bush.....	3,317,607	2,360,359
Rye flour, bbls.....	3,544	13,452
Wheat, bush.....	56,788,022	69,289,099
Wheat flour, bbls.....	2,995,806	17,333,263
Other small grain and pulse.....		545,477
Maize, farms, and all other preparations of breadstuffs used as food.....		1,496,956

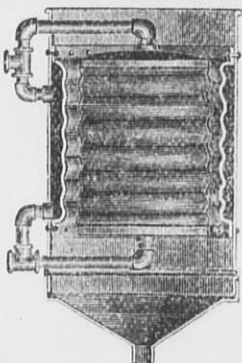
KILBURN'S IMPROVED BOLTING REEL.—An improved bolting reel has lately been invented and patented by Mr. Thaddeus O. Kilburn, of Washington, Minn., which is well worthy the attention of all concerned in the milling interests of the country. It is intended especially to handle blowings from purifiers, taking out any flour left in them by the air blast of the purifiers, and also any other material about a mill that from its fuzzy nature is hard to handle in a common reel. The reel facilitates the sliding of the meal and secures a finer and superior bolted product. All practical improvements that effect any advance, no matter how small, in the milling interest of the country, are welcomed by the enterprising and wide-awake fraternity, and never fail to find ready place. In this class, will rank this invention of Mr. Kilburn, but this is no more than might be expected. Mr. Kilburn's location in the center of a vast wheat growing and milling region allows him the best of facilities (as it does to any thinking, practical man) for ascertaining exactly what is needed and what will be acceptable to the controllers of the vast interests of Minnesota.

Alabama Flour Mill For Sale.

2-run Custom and Merchant Mill in Springville, Ala., complete. Excellent location. Good trade. Splendid climate. Mill close to a perpetual cold spring, furnishing water enough to run 15 or 20 horse-power turbine with 15 foot fall. Mill now uses steam power. Satisfactory reasons given for selling. Terms, \$1,500 down and \$500 in 12 months. Must be closed out before Christmas. For further information address A. J. ADERHOLD, dect Springville, Ala.

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Patented March 5, 1878.

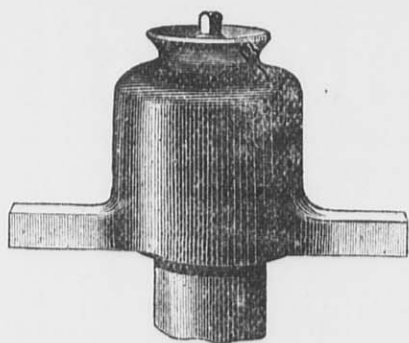


The ONLY Heater made of HEAVY COPPER THROUGHOUT; and standing 175 lbs. Hydraulic Pressure. The ONLY Heater that EVENLY heats EACH and EVERY grain of wheat; and draws the moisture from the berry to the outside or bran; thereby THOROUGHLY TIGHTENING THE BRAN ON THE HARDEST or DRIEST Spring or Winter Wheat.

Send for descriptive circular.

GRATIOT BROS., Platteville, Wis.

THE CHAMPION Mill-Stone Driver



The Only Practically Perfect Driver in the Market.

This Driver combines a cockhead of improved construction with a universal joint and equalizing drive. All the working parts are up above the accumulation of dirt about the spindle and are completely encased in the bail. They will always remain oiled. Will not clog with dust or corrode or wear. Always free to work and allowing the runner to adjust itself to the bed stone, however bad the spindle may be tramed. Guaranteed to fulfill all the conditions necessary in the driving irons to produce a perfect running stone. The principles of construction and perfection of workmanship are unequalled by any other Driver in the market.

For illustrated circular and price list, address ALBERT CUNNINGHAM, PATENTE, Milwaukee, Wis.

VAN DE WATER'S NEWLY IMPROVED Jouval Turbine Water Wheel.

83 PER CENT. GUARANTEED.

No wise man in want of a good 83 per cent. Water Wheel will hesitate in sending his orders for Wheels from 6-inch to 72-inch diameter. All orders will be promptly filled on the following conditions: The Wheels may be tested by James Emerson, of Holyoke, Mass., or any other party who has a testing flume desired by purchaser. I will build my Wheels to order and guarantee them to give 83 per cent. of the useful effect of the water used, and accompanied by the certificate of the party who may test the Wheel for the purchaser, under the following conditions: Purchaser to pay 10 per cent. additional to the price of the Wheel for freight and testing, providing it gives 83 per cent., and if only 80 per cent., is obtained the additional 10 per cent. will not be charged, but the Wheel shall be considered sold, and if less than 80 per cent., No SALE. It is true every turbine builder claims to have the best Wheel in the world, but if purchasers of Wheels would insist upon having them tested, disreputable and ignorant Wheel builders would be driven from the market. A poor Turbine is dear at any price, and the public knows that I am right in so saying.

REDUCED PRICE LIST, NOVEMBER 1, 1878:

Diameter of Wheel, inches.	6	9	12	16	20	25	30	36	42	48	54	60	66	72
Price.....	\$175	\$180	\$190	\$200	\$215	\$275	\$350	\$375	\$425	\$575	\$650	\$760	\$875	\$1,025

It is optional with the purchaser to take Wheel tested or not, for the above price from shop. Address all communications to

HENRY VAN DE WATER, Auburn, New York, U. S. A.

REFERENCES:

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N. S. FULLMAN.

J. O. Kendall & Co., of Hartford, Wis., say of their 30-inch Wheel: "It will dress and grind from 5 to 6 bushels of wheat per hour on each pair of burrs and from 15 to 20 upon the feed-run, and can drive them all to do the above amount of work. We have 5-run of 4-foot burrs and 1 feed-run, also a large amount of cleaning machinery, and the Wheel runs them all to our satisfaction." Any number of references can be furnished upon application

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Superior Wheat Seouring and Brush Machines. General Mill Furnishings.

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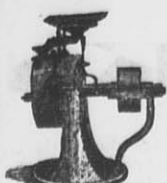
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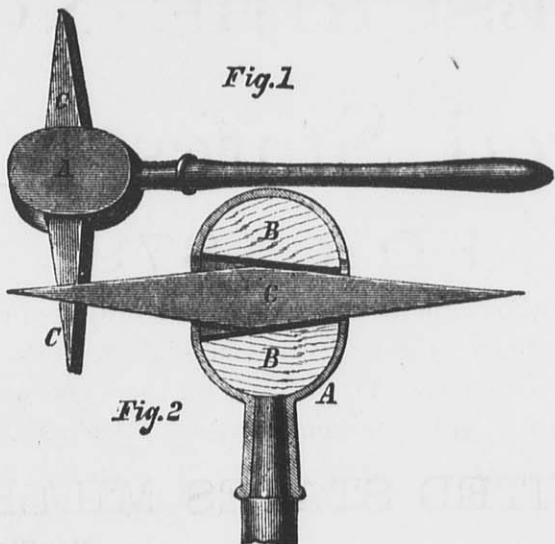
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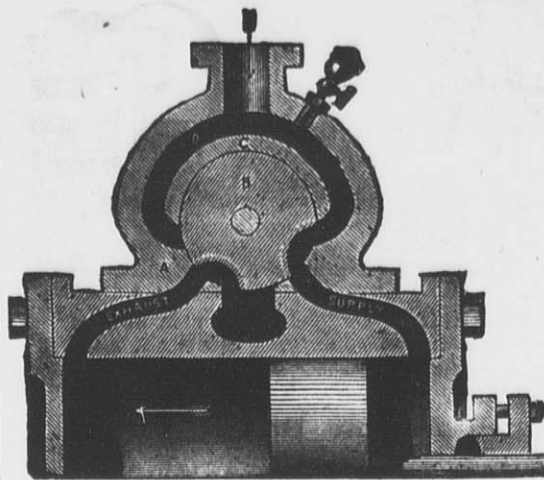
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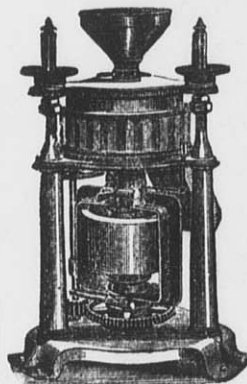
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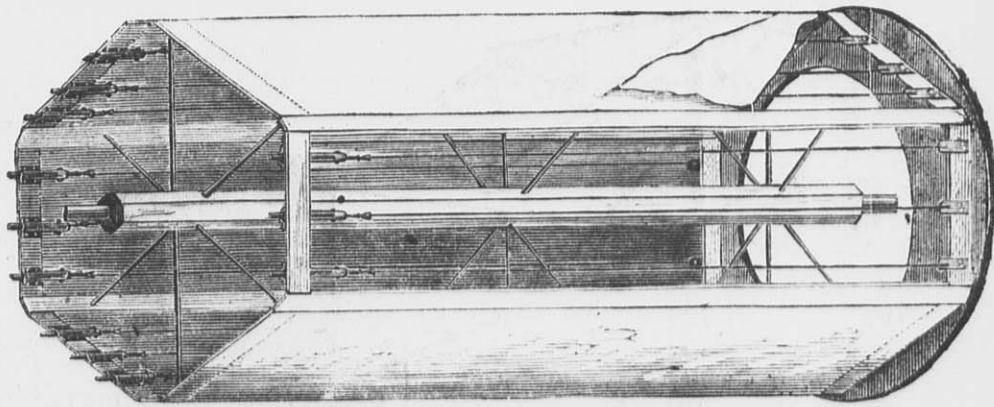
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4. It will make clearer and more uniform flour.
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6. It is simple, durable and effective.
7. It is under complete control, can be used or disengaged from use at pleasure.
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10. It is impossible for any cloth to clog with this attachment applied
11. It is the best thing ever used to keep bugs out of the reels.
12. Without it the bolt controls the miller. With it, the miller controls the bolt.

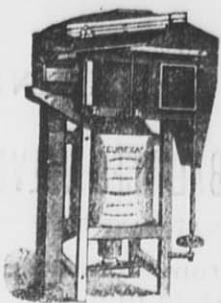
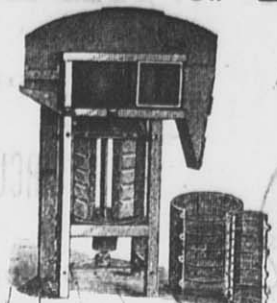
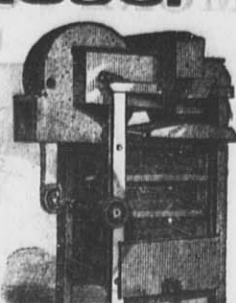
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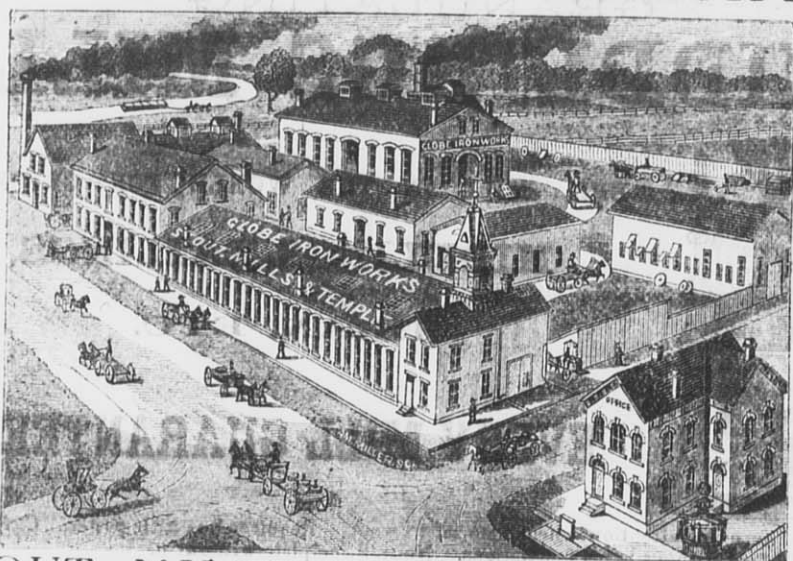
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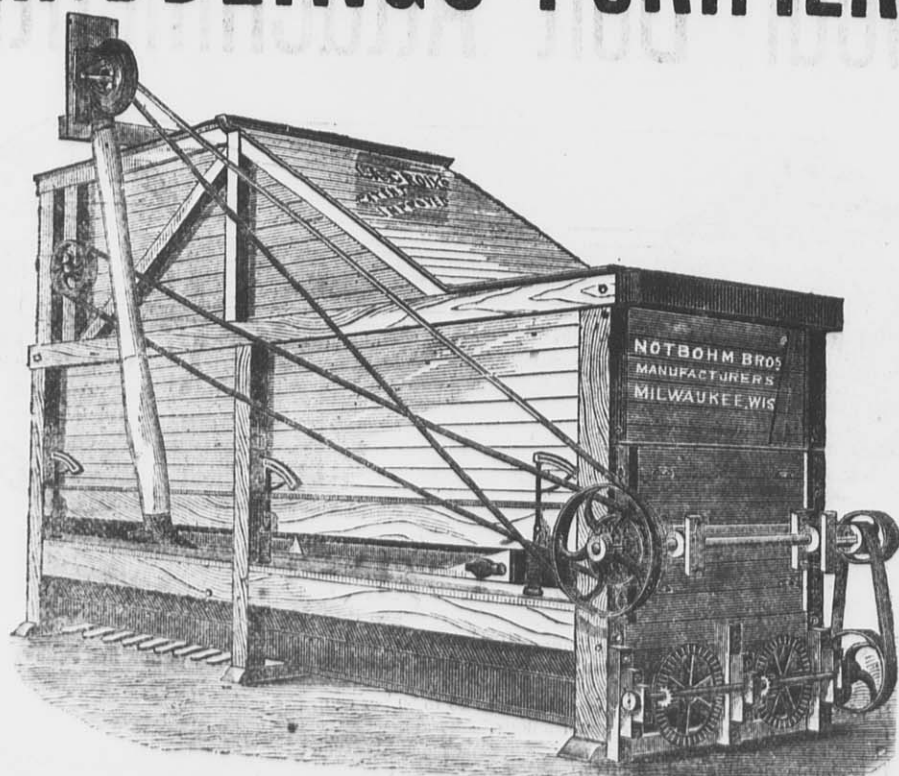
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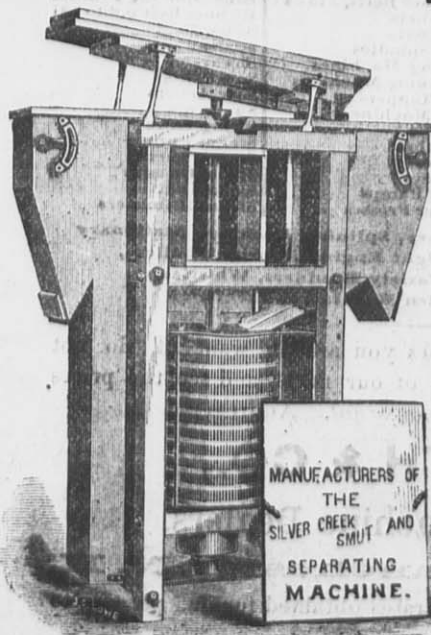
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With Adjustable Shaking Shoe and
Changable Cockle-Screens, whereby
all Cockle can be extracted from the
Wheat. Will do thorough work,
both as a Scourer and Separator.

Warranted not to cut or break wheat.

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